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ON SPECIFIC GRAVITY AND INCREASE IN VOLUME.

By William Clay Smith, Ph.G.

From an Inaugural Essay.

When solids are dissolved in liquids there is an increase in volume, and a number of experiments were undertaken to ascertain this increase in regard to some chemicals of the Pharmacopœia. The method of conducting the experiments was as follows:

A graduated tube was taken, and in this was placed 20 cubic centimeters of distilled water, the temperature being carefully noted and maintained as near 60°F. as possible; to this was added a weighed quantity of the substance, sufficient to form a nearly saturated solution; after solution the temperature was again noted, and if too high, was reduced to 60°F. and the volume again noted; for example, if 10 grams of citric acid had been dissolved in 20 cc. of distilled water, the volume was found to be 26·3 cc., showing the increase to have been 6·3 cc. To the solution thus obtained 10 cc. more of water was added, giving a solution of 10 grams of substance in 30 cc. of distilled water. When thoroughly mixed and the temperature reduced to 60°F., it showed the increase to be 6·1 cc., or a contraction of 0·2 cc.; when 10 cc. more of water was added the volume was further reduced, giving as a result 5·9 cc. as the increase, or a contration of 0·2 cc. for each 10 cc. of water added. This contraction of volume was found to occur in almost every instance.

There was also a second series of experiments made with one-half the quantity of each substance and half the amount of water, with a view of confirming the first experiments, and in the majority of cases the result was the same or within a fraction of one per cent. In those cases where the difference was great enough to suppose that there had been an error of observation, the experiments were repeated and the results accepted which corresponded most closely.

The results given in the table are all calculated for one hundred grams of substance.

It was thought desirable, while making these experiments, to also ascertain the specific gravity of the substance in the solid state and in solution. To ascertain the specific gravity of the substance in solution, it was only necessary to note the increase in volume or the amount of water displaced, and dividing the weight of the substance used by the increase in volume of the liquid. It was found more difficult to ascertain the correct specific gravity of some of the solids, owing to the difficulty of obtaining them in perfect crystals. In a number of instances, however, the decimals agreed in both experiments. With potassium nitrate and potassium bromide it was found especially difficult to make any two experiments agree; in the former, owing to the cavities contained in the crystals filled with the mother liquor, numerous experiments were made with different crystals, some being so small, thin and transparent, that it was thought they could not possibly contain any mother liquor, but these gave no better results than others. A few crystals were then selected, placed in strong alcohol and allowed to remain several days, then carefully removed, dried and the specific gravity again taken. On comparison, no two of these results agreed either with themselves or with the specific gravity of each crystal taken before being placed in alcohol.

In the summary of the results of different specific gravities obtained in the air, it was thought advisable to make comparison of these with the results of others, as given in Watt's "Dictionary of Chemistry," "Gmelin's Handbuch," and other standard works.

The specific gravity of substances were taken at least twice. In every instance where the specific gravity of a substance is given in solution the specific gravity of the solid substance used has also been determined.

Substance.	Specific Gravity of Solid.	Amount of water used for Dissolving 100 gms.	Volume of liquid after Solution of Substance.	Specific Gravity of Substance in Solution.
		cc.	cc.	
Acidum citricum, . .	1·557	200	263	1·587
		300	361	1·639
		400	459	1·695
Acidum oxalicum, C. P., .	1·57	1000	1070	1·429
	(Bödeker, 1·63)	1500	1565	1·538
		2000	2060	1·667

Substance.	Specific Gravity of Solid	Amount of water used for Dissolving 100 gms.	Volume of liquid after Solution of Substance.	Specific Gravity of Substance in Solution.
		cc.	cc.	
Acidum tannicum,	1·097	300	362	1·613
		500	558	1·724
		700	754	1·852
Acidum tartaricum,	1·77	200	257	1·754
	(Richter, 1·75)	300	355	1·818
Alumen,	1·661	2000	2050	2·000
	Buignet, 1·653)			
Aluminii et potassii sulph.,	1·753	1000	1055	1·818
	(Watt's Dic., 1·7)	1500	1545	2·222
		2000	2035	2·843
Ammonii chlorid. purif.,	1·456	300	371	1·408
		400	469	1·447
Ammonii sulphas purif.,	1·7	200	250	2·000
		300	347	2·128
		400	443	2·326
Calcii chloridum, anhydr.,	1·754	100	150	2·000
		200	249	2·041
		300	348	2·083
		400	447	2·128
Cupri sulphas,	2·212	300	339	2·564
		400	437	2·702
Ferri sulphas,	1·896	200	249	2·041
		300	347	2·128
		400	445	2·222
Plumbi acetas,	2·460	200	240	2·500
		300	339	2·564
		400	437	2·703
Potassa (sticks),	1·958	100	143	2·326
	(Dalton, 2·1)	200	241	2·439
		300	337	2·703
Potassii acetas,	1·442	100	158	1·724
		200	254	1·852
		300	352	1·923
Potassii bicarbonas,	2·078	400	440	2·500
		600	636	2·777
Potassi carbonas,	2·105	100	186	1·163
		200	282	1·220
		300	379	1·266
Potassii citras,	1·98	100	156	1·786
		200	243	2·326
		300	341	2·439
Potassii cyanidum, com'l,	1·704	100	153	1·887
		200	251	1·961
		300	348	2·083
Potassii et sodii tartras,	1·77	200	253	1·887
	(Schiff, 1·767)	300	351	1·961
	(Buignet, 1·790)	400	449	2·041
Potassii chloras,	2·167	2000	2035	2·857
Potassii bichromas,	2·694	1000	1040	2·500
		1500	1530	3·333
		2000	2025	4·000

Substance.	Specific Gravity of Solid.	Amount of water used for Dissolving 100 gms.	Volume of liquid after Solution of Substance.	Specific Gravity of Substance in Solution.
		cc.	cc.	
Potassii bromidum, . .	(Schröder, 2·690)	200	233	3·030
		300	331	3·226
		400	429	3·448
Potassii iodidum, . .	(Schröder, 3·079)	100	133	3·030
	3·135	200	233	3·030
	(Karsten, 2·9084)	300	333	3·030
	(Boullay, 3·000)			
	(Schiff, 2·850)			
Potassii nitras, . .		400	440	2·500
		600	636	2·777
		800	834	2·941
Potassii sulphas, . .	2 715	1500	1520	5·000
	(Ropp, 2·662)	2000	2015	6·333
	(Buignet, 2·572)			
Magnesii sulphas, . .	1·632	200	255	1·818
		300	353	1·887
		400	452	1·953
Saccharum, . . .	1·589	100	161	1·639
		200	260	1·666
		300	359	1·695
		400	458	1·724
Saccharum lactis (powdered, commercial), . .	1·533	1000	1070	1·429
		1500	1565	1·539
		2000	2055	1·818
Soda, ...	1·723	100	142	2·381
	(Dalton, 2·000)	200	237	2·703
		300	333	3·030
Sodii bicarbonas, . .	2·159	1500	1530	3·333
		2000	2025	4·000
Sodii boras, . . .	1·736	2000	2050	2·000
Sodii carbonas, . .	crystals, 1·54	200	263	1·587
	(Karsten, 2·4659)	300	361	1·639
	(anhydrous)	400	460	1·667
Sodii chloridum, . .	1·984	400	434	2·941
	(Watts, 2·1—2·57)	600	632	3·125
Sodii hyposulphis, . .	1·723	200	255	1·818
		300	353	1·887
		400	451	1·961
Sodii nitras, purif., . .	2·148	200	239	2·564
	(Kopp, 2·24)	300	338	2·632
	(Karsten, 2·2256)	400	437	2·703
	(Schröder, 2·256)			
Sodii phosphas, . .	1·535	400	456	1·786
	(Schiff, 1·525)	600	654	1·841
		800	850	2·000
Sodii sulphas, . . .	1·431	300	360	1·666
	(Cordier, 2·73)	500	560	1·666
	(Thompson, 2·645)	700	756	1·786
Sodii sulphis, . . .	1·92	200	255	1·818
		300	353	1·887
		400	452	1·923
Zinci acetas, . .	1·317	300	350	2·000
		400	447	2·128
Zinci sulphas, . .	1·961	300	345	2·222
		400	443	2·326

Results of various specific gravities of potassii nitras, 1·953, 2·001, 2·115, 2·081, 2·248, 2·176, 2·207, 2·47. Crystals, after being macerated in strong alcohol, dried and specific gravity again taken, give 2·218, 2·809, 2·559; the results of other investigators are 2·11 Kopp, 2.1006 Karsten, 2·100 Schiff, 2·086 Schröder. The specific gravity of different crystals of potassium bromide was determined as follows: 1·795, 1·973, 2·008, 2·258, 2·36 and 2·377.

THE SOLUBILITIES OF ALKALOIDS IN ALCOHOL.

By Albert Henry Lafean, Ph.G.

From an Inaugural Essay.

On several occasions having been called upon to make alcoholic solutions of the alkaloids, and, upon consulting the different text-books, finding the statements differing very much, it was thought a useful subject of investigation to determine the solubilities from actual experiments. In most cases alcohols of different strengths and various temperatures were employed for the solubilities as given in text-books. Besides this the article is frequently merely stated to be "very" or "slightly" soluble.

The authorities which were consulted were the United States Dispensatory, the National Dispensatory, and Storer's "Dictionary of Chemical Solubilities," and below is given a list of the alkaloids selected for the experiments, with a table showing their solubility in alcohol of usual strength, as determined by the writer, and as given by text-books.

The method of ascertaining the solubility of the alkaloid was to place a given quantity in a somewhat less quantity of alcohol than that recommended by the text-books or authorities, contained in an accurately graduated tube, and at ten degrees higher temperature than the standard temperature selected (60°F.). The alkaloid was digested for several hours, with occasional agitation, and if the quantity of alcohol was insufficient an addition was carefully made until solution was effected at this slightly higher temperature. If an excess of alcohol happened to be added the tube was left unstopped, to permit evaporation, for a few hours, until a slight deposition took place. If this failed to be dissolved at a slightly elevated temperature, a very small quantity of alcohol was added, sufficient to take up the slight excess, and the solution was then brought to the proper temperature, 60°F.

	United States Dispensatory.	National Dispensatory	Storer's Dictionary of Chemical Solubilities.	Lafean.
Atropia.	Soluble in 8 parts of alcohol.	Soluble in a little alcohol.	3 to 8 parts cold alcohol. Easily soluble in alcohol. Soluble in 1·5 part cold alcohol.	Soluble in 2 of alcohol.
Cinchonia.	Soluble in boiling alcohol, which deposits a portion on cooling.	Soluble in 140 parts 80 per cent. alcohol.	Soluble in 400 parts alcohol, 80 per cent., at 17°. 110 parts, at temperature of boiling. 33·8 parts strong alcohol. 115·78 parts alcohol, ·90 per cent., 15°. 126·5 parts absolute alcohol, at about 15°.	Soluble in 145 of alcohol.
Cinchonidia.	None given.	Soluble in 20 parts ·80 per cent. alcohol.	88 parts cold alcohol. ·833 and 19 of the same alcohol, at boiling. In 12 alcohol, ·835.	Soluble in 30 of alcohol.
Caffeia.	Soluble in alcohol.	Not freely soluble in water, more so in alcohol, and chloroform, but less in absolute alcohol and ether.	20 parts alcohol, 21°. 25 parts 85 per cent. alcohol, 20°. Quickly soluble in boiling alcohol.	Soluble in 150 of alcohol.
Colchicia.	Very soluble in alcohol.	Freely soluble in alcohol.	Soluble in alcohol.	Soluble in 3 of alcohol.
Daturia.	Is very soluble in alcohol.	Identical with atropia in solubility.	Vid. Atropia.	Soluble in 2 of alcohol.
Morphia.	Slightly soluble in cold alcohol, and freely so in boiling alcohol, which deposits it on cooling.	Soluble in 30 boiling and 50 cold alcohol.	20 parts cold and 13 of boiling alcohol, sp. gr. ·822.	Soluble in 215 of alcohol.
Narcotina.	Soluble in 100 parts cold and 24 parts boiling alcohol, which deposits it on cooling.	None given.	Soluble in 100 parts cold and 24 of boiling alcohol.	Soluble in 265 of alcohol.
Quinia.	Is very soluble in alcohol.	Soluble in 30 parts 80 per cent. alcohol.	Soluble in all proportions of cold absolute alcohol, and in almost all proportions of alcohol 90 per cent.	Soluble in ·8 of alcohol.
Quinidia.	None given.	Soluble in 45 parts absolute alcohol.	Soluble in 45 parts cold absolute alcohol. 3·7 parts of warm ordinary alcohol.	Soluble in 115 of alcohol.
Strychnia.	Boiling officinal alcohol dissolves it without difficulty, and deposits it on cooling. Very sparingly soluble in absolute alcohol.	120 parts cold and 10 pts. boiling 80 per cent. alcohol. Sparingly soluble in absolute and dilute alcohol.	1,200 parts alcohol, 80 per cent., ordinary temperature. 10 parts boiling 80 per cent. alcohol.	Soluble in 175 of alcohol.
Veratria.	Soluble in 11 parts of alcohol, ·847.	Soluble in 3 parts of alcohol.	Soluble in 3 parts of cold and 2 of boiling alcohol.	Soluble in ·8 of alcohol.

This plan was adopted because it was believed to present advantage over the usual methods of digestion, or by cooling, as less troublesome, less liable to error, which in the case of ordinary digestion is apt to occur, with an excess of the salt (? Editor), through moisture adhering to the excess of salt (?) that is filtered out, and also less danger through supersaturation, which is likely to happen by the hot process. Moreover, it was believed that it would be better to give solubilities that represent the actual amount dissolved under such conditions as are likely to exist in actual dispensing practice.

NOTE ON THE PHYSIOLOGICAL ACTION OF CHLORAL.

By Frederick B. Power, Ph.D.

In the last number of this journal, March, 1881, p. 119, an abstract of an article is given which appeared in the "Chemisches Centralblatt," 1881, p. 9, relating to the introduction by Tauber at the meeting of German naturalists at Danzig of two new anæsthetics. The anæsthetic action of these two long-known isomeric organic compounds, monochlorethylidene dichloride, $CH_3—CCl_3$, and monochlorethylene dichloride, $CH_2Cl—CHCl_2$, coupled with the fact of their yielding no chloroform by decomposition with alkalies, appears to have served as an argument against the correctness of the theory of Liebreich, according to which the physiological action of chloral was supposed to be due to its decomposition into chloroform through the agency of the alkaline blood.

It may not be out of place, therefore, to call to mind the fact that the alkaline reaction of the blood is due, not to the presence of free alkali, but to acid alkaline carbonates or bicarbonates, which are not capable of effecting the decomposition of chloral with the formation of chloroform; the long since discarded theory of Liebreich being thus untenable upon very simple grounds. As the blood in all parts of the body contains carbonic acid gas, the venous relatively more than the arterial, and in the former case amounting to about one-third the volume of the blood, the presence of free alkali can scarcely be presumed.

To whatever cause, therefore, the soporific action of chloral may be due, it follows that if chloroform is really produced, other substances of an unknown nature must be brought into action effecting its decomposition, which, similar to the changes occurring in the assimilation of plants with the production of the complex organic principles, cannot as yet be traced or represented by chemical formulæ.

COMPOUND SPIRIT OF CINNAMON.

To the Editor American Journal of Pharmacy:

Not unfrequently we receive prescriptions containing unofficinal preparations, for which can be found no standard formulæ in any of the recognized works on pharmacy. Are we not fully justified in forming such combination as we think proper, notwithstanding it might differ somewhat from that intended by the physician?

I received the following prescription:

℞	Bismuthi subcarb., . . .	ʒii
	Spir. cinnamomi comp., . .	℥ss
	Aquæ camph., ...	℥iii
	M.	

I adopted the following formula:

Spir. lavand. comp., . . .	Oi, or (℥ss)
Olei cinnamomi, . . .	ʒi, or (♏ii). Mix.

From an *unofficinal* standpoint the compound spirit of lavender is already a compound of cinnamon, and the addition of the oil of cinnamon gives prominence to that drug in the form of a spirit.

Very Respectfully, ALLEN SCHRYOCK, PH.G.

Philadelphia, March 4, 1881.

REMARKS BY THE EDITOR.—Although we condemn the practice of some physicians of unnecessarily ordering unofficinal preparations, the composition of which is frequently unknown to them, we cannot approve of pharmacists furnishing, in doubtful cases, preparations which may not have been intended by the physician; if the latter be accessible, he should be consulted. In the case cited by our correspondent the spirit seems to have been merely intended to serve as a vehicle, in which case a change in its composition would be of very little moment, except as far as appearance and taste are influenced. Formerly most European pharmacopœias contained an *Aqua cinnamomi vinosa*, which was prepared by macerating cinnamon in wine and distilling a definite quantity; the product was also known as *spiritus cinnamomi*, and since some formulas directed the addition of another aromatic, like melissa, etc., the liquid was in fact a compound spirit. The wine has now been discarded, and is replaced by alcohol in such a proportion that from 12 to 14, or 15, per cent. of it are contained in the distillate. In France, however, a compound spirit of cinnamon is still in use, and designated *alcoolat de cannelle composé*, known also as

esprit de vie de Matthiole. Its formula is as follows: Take of cinnamon 30 parts; galangal, marjoram, mint, cubeb, aloes wood, ginger, zedoary, clove, nutmeg and mace, of each 15 parts; calamus, thyme, wild thyme, sage, rosemary, red rose, of each 8 parts; yellow santal wood, cardamom, anise, fennel, of each 4 parts; lemon peel, 45 parts; 80 per cent. alcohol, 3,000 parts. After sufficient maceration, the mixture is distilled until all the spirit has been recovered.

EXTRACT OF BUTTERNUT.

By B. F. Moise, Jr.

Abstract of an Inaugural Essay.

The author endeavored to obtain from the bark of Juglans cinerea an extract, which should be equally sufficient but in much smaller doses than the one now officinal, prepared with cold water.

A quantity of butternut bark was powdered so as to pass through a No. 20 sieve, and by percolation exhausted with distilled water; the extract obtained (quantity of the bark not given) weighed 4·989 grams = 77 grains, and proved to be an efficient cathartic in doses of 20 to 30 gr.

An extract was next prepared with alcohol, the amount of bark being the same as in the preceding experiment. This extract weighed 10·84 gm. = 166·6 gr. It contained some fixed oil, which keeps it of a plastic consistency and prevents its adhering to the jar and spatula. In doses of 3 and 4 grains the extract had a gentle laxative effect; 5 grains acted as a good purge and 10 grains proved to be quite actively cathartic.

The extract prepared with diluted alcohol weighed 10·216 gm. = 157·2 gr. It was free from fixed oil, and in doses of 5 grains acted promptly, nearly equal to 10 grains of the alcoholic extract, while the diluted alcohol extract in doses of 10 grains acted as a prompt, reliable and certain cathartic. The stools were sometimes of a semi-solid consistency, at times watery, and accompanied with a feeling of sickness and inclination to headache.

A few experiments were made with an alcoholic fluid extract of butternut bark. By diluting with water and acidulating with hydrochloric acid a blackish precipitate was obtained, which was soluble in alcohol and ether, sparingly soluble in benzin and oil of turpentine, and consisted of resin, with a little fatty matter.

An alcoholic extract of the bark was treated with benzin to remove fat, then redissolved in stronger alcohol, and this solution poured into water acidulated with acetic acid, when a greenish-brown resinous precipitate was obtained, which, on being dried at a gentle heat, gave off vapors having a decided acid reaction on litmus. This resin is colored dark purple by alkalies and dissolves completely in potassa solution. (For researches on the constituents of butternut bark consult essays by Chas. O. Thiebaud and E. S. Dawson in "Amer. Jour. Pharm.," 1872, p. 253, and 1874, p. 167.)

BENZOATE OF CALCIUM.

By James T. Shinn.

Read at the Phamaceutical Meeting, March 15.

Having been requested by Dr. Albert H. Smith to prepare some benzoate of calcium for a patient we at first made it extemporaneously by rubbing together the benzoic acid and carbonate of calcium with a little water until effervescence ceased, making a pill mass of the benzoate thus formed and dispensing it in gelatin capsules. As time was not always allowed for thorough combination, the formation of carbonic acid gas in the capsules sometimes caused them to swell and become distorted, and it was thought best to have the salt all ready prepared. The proportions of benzoic acid and calcium in the benzoate are 113 to 20, or of the crystallized acid and carbonate of calcium, 122 to 50. Hence the following formula for its manufacture:

Take of benzoic acid, . .	℥iv gr. xxxii (1952 grains).
Calcium carbonate, .	℥i ʒv ℈i (800 grains).
Boiling water, . .	Oiv or q.s.

Mix the acid and precipitated chalk thoroughly in a large mortar and add water gradually to allow most of the carbonic acid gas to escape and prevent frothing over of the liquid. When the combination has taken place, or nearly so, the mass is transferred to a porcelain dish and dissolved in the remainder of the boiling water, with the exception of a slight excess of carbonate of calcium. Filter, while hot, into a shallow dish, when crystals will form on cooling. The mother-liquors may be evaporated twice more and yield more crystals, the whole product being about ℥iv ʒv.

The salt is in feathery crystals, of a silky lustre, odorless, with but slight, rather alkaline, taste, and is soluble in about 24 parts of water.

It may be dispensed either in capsules or solution, a very good form of the latter being:

℞ Calcii benzoat., . . . gr. cxxviii
Aquæ destillat., . . . f℥vi
Syr. aurantii, . . . f℥ii:
M. Ft. mist.

This makes a solution, by the aid of heat, containing 8 grains to half a fluidounce, which is the usual dose.

At a meeting of the County Medical Society Drs. Smith and O'Hara spoke of the great benefit this preparation had been in cases of albuminuria during pregnancy, and, as the salt may be called for and is not on the price lists of the chemists, a formula for its preparation may be useful. The first crop of crystals can be taken out and dried on bibulous paper within an hour of the receipt of the prescription by the apothecary.

GUM SAVAKIN.

By George Reimann, Ph.G.

From an Inaugural Essay.

This gum is gathered near the west coast of the Red Sea, further east than the other varieties of gum arabic, and is shipped from the port of Suakin or Savakin, hence its name. It appears in commerce as sub-globular tears, which are more or less broken, have a conchoidal glass-like fracture and, in consequence of numerous fissures, quite opaque. It is imported in considerable quantity and not unfrequently sold for medicinal use.

A mucilage made with 8 ozs. of this gum to one pint of water was found to be very thick and viscid, a great deal of the gum remaining, as it seemed, undissolved; this was strained out. On diluting the mucilage with water it was noticed that what appeared to be small transparent globules separated, and upon repeated shaking would not dissolve. Some of these globules were collected by diluting the mucilage with water, stirring constantly, allowing to settle, decanting the water, and repeating this operation until all the soluble matter had been removed. The globules were found to be insoluble in boiling water, but on the addition of solution of caustic potassa, or other caustic alkali, they were dissolved, but the salts of the alkalies were without action. A quantity of the globules were spread on panes of glass and dried, yielding thin transparent scales. On boiling these

with water they would merely swell up and be transformed into transparent globules again.

These experiments show that they are analogous to and doubtless identical with *gummic acid*, which seems to pre-exist in the gum, in the free state, and in the mucilage is held in suspension, while from a dilute aqueous solution it separates as colorless globules.

Numerous expedients have been tried to prevent this precipitation, and the only one found successful was to carefully add, before straining, to one-half of the mucilage sufficient solution of caustic potassa to make it very slightly alkaline, then add the other half of the mucilage and shake the mixture well, which should now have a slight acid reaction. After it has stood a little while it can be strained without loss, and may be mixed with water and otherwise used like that prepared from Kordofan gum.

Five grams of the gum were incinerated and yielded ·19 gram of ash, equal to 3·8 per cent. Analysis showed the presence of calcium, magnesium and potassium.

Propionylquinia, $C_{20}H_{22}(C_3H_5O)N_2O_2$, is a new base obtained by O. Hesse by treating quinia hydrochlorate for several hours with propionic anhydride at a temperature of 60 to 80°C., adding a little water, evaporating, dissolving the residue in water, adding ammonia in excess, and agitating with ether. On evaporating the etherial solution prisms are obtained imbedded in a tough mass, the latter being absorbed by filtering paper, which is occasinally moistened with ether, and finally by bibulous paper moistened with alcohol.

Propionylquinia forms colorless hexagonal prisms of the rhombic system, melts at 129°C. (uncorr.), and is rather freely soluble in ether, alcohol and chloroform, but with difficulty in water. The alcoholic solution is bitter, strongly alkaline, yields quinia and propionic acid on being boiled with potassa, and becomes intensely green on the addition of chlorine and ammonia. The alkaloid is lævogyre, in water with 3HCl—108·8°; its solution in dilute sulphuric acid shows blue fluorescence.

The tough amorphous compound mentioned above is mainly propionylquinia, and on saponification yields only quinia. Not a trace of a quinicia derivative is obtained.—Reprint from *Annal. d. Chemie*, vol. 205, p. 358.

THE ROOT OF HYDRANGEA ARBORESCENS.

By Jacob Baur, Ph.G.

From an Inaugural Essay.

In looking over the pharmaceutical and chemical literature with reference to hydrangea, the only analysis found was that by Mr. Jos. Laidley, of Richmond, Virginia, in the year 1851, since which time no one seems to have published anything with regard to the principles to which the drug might owe its activity. Laidley found but gum, starch, resin, etc. In writing of the drug and its uses in gravel and urinary diseases, he notes some marked cures effected by its administration, which are no less remarkable than some which have been communicated to me by Dr. Jno. H. Parrish, of Saundersville, Tenn., who has used with good results an extract of the root prepared by the late Prof. Edward Parrish, and recently by Mr. Clemmons Parrish. He says, "My case-books show thirty-one cases of gravelly deposits in the bladder, which I believe to have been cured by hydrangea; I remember no case in which it has failed under fair circumstances. I regard hydrangea as a valuable remedial agent not only in sabulous troubles, but in any case where the functions of the kidneys are impaired." Other physicians have recommended it in the same complaints. That it is used by many physicians may be known from the words of Prof. J. U. Lloyd, of Cincinnati, who writes: "The section of country about Cincinnati annually supplies large amounts of hydrangea root for other markets."

A quantity of the root of good quality was obtained, its identity established and carefully inspected as to the absence of all foreign admixtures. This was ground suitably for percolation; some difficulty was here encountered owing to the peculiar ligneous character of the root, the greater portion of which is an insipid hard wood, with but a thin much fissured bark, which, as found in the market, is quite frequently detached in thin conceentric layers, due to the unequal shrinkage of the wood and bark in drying. The peculiar sweetish but acrid taste of the root seems to reside in the bark.

Three grams of the root were ignited, yielding 13 grams of ash, the greater portion of which was soluble in water. The appropriate tests being made, carbonates, sulphates and phosphates of potassium, sodium, calcium, magnesium and iron were found in the ash.

In a preliminary investigation, which was undertaken to ascertain

the best solvents for its important constituents, a decided indication of an alkaloid was obtained by the application of the various alkaloidal tests; the following experiments were made in order to isolate the alkaloid, if possible.

One thousand grams of the drug were exhausted with alcohol of ·828 sp. gr. by percolation, yielded 38·209 grams of extract, which was redissolved in a small quantity of warm alcohol, and poured into one quart of water previously acidulated with acetic acid; the resin separated weighed 6·43 grams.

The filtrate (*a*) was set aside for further investigation. The resin obtained had a sweet, mild, but afterwards lastingly acrid taste. It was insoluble in ammonic hydrate, almost entirely soluble in potassic hydrate, which solution was precipitated by hydric chloride. Approximately one-half the resin was soluble in ether. The insoluble portion was almost insoluble in amylic alcohol. The alcoholic solution of the resin was precipitated by solutions of neutral and basic plumbic acetate.

The filtrate (*a*), obtained on separating the resin, was evaporated to an extract which had a saccharine odor and a bitterish taste, and weighed 31·566 grams. This extract was dissolved in a small quantity of warm water and filtered; the next morning the solution contained a few crystals which it was found impossible to separate. Solutions of neutral and basic plumbic acetate were added to thoroughly precipitate tannin, yielding a bluish-black precipitate with iron salts; the excess of lead was removed by sulphuretted hydrogen, the filtrate evaporated to small bulk, acidulated with hydric chloride and shaken with ether; the ethereal layer evaporated spontaneously left but a slight residue, in which no alkaloid was present.

The aqueous portion was then shaken with pure amylic alcohol, the latter separated and evaporated to dryness, the slight residue remaining gave in solution the following reactions: with Mayer's solution, a light, whitish, flocculent precipitate; with iodine in potassium iodide, a brown precipitate. Phospho-molybdic acid and tannin both gave precipitates. Platinic chloride gave a yellowish precipitate having a crystalline appearance on standing a short time. Picric acid gave no precipitate.

One hundred and twenty-five grams of the drug were exhausted by maceration and percolation with pure coal tar benzol. The greater portion of the benzol was recovered and an extract weighing 1·43 gram was obtained. Warm acidulated water (with HCl) was shaken with

the extract and yielded then, with the alkaloidal reagents, light precipitates. Tests for glucosides were also applied with no indication of their presence. The extract was almost entirely dissolved by alcohol.

The drug exhausted by benzol was dried and exhausted by 80 per cent. alcohol. On evaporation to a small bulk a few crystals separated; the solution was acidulated, diluted and precipitated with plumbic acetate. After removing excess of lead by sulphuretted hydrogen, the filtrate gave again indications of the presence of an alkaloid by the above tests. The drug treated with benzol and alcohol was exhausted with water; the extract obtained contained sugar and gum.

Five hundred grams of the powdered root were boiled repeatedly with acidulated water, the mixed decoctions evaporated to a small volume, the gum removed by an equal volume of alcohol, and, after recovering the alcohol, the tannin precipitated by subacetate of lead, which precipitates also coloring matter. After removing excess of lead reactions were again obtained pointing to the presence of an alkaloid; however, judging by the quantity of drug operated upon, this alkaloid, if such it is, must be present in minute quantities. The presence of an alkaloid would, indeed, be interesting as being the first one discovered in any plant of the natural order saxifragaceæ.

The constituents of hydrangea root, determined by these experiments, are resin soluble in ether, resin insoluble in ether, probably an alkaloid and a crystalline compound, the nature of which was not determined; also tannin, gum, sugar, coloring matter, and 4·33 per cent. of ash.

Recognition of Quebracho Bark.—G. Fraude recommends the following process: 5 grams of the bruised bark are boiled for about 5 minutes with 25 cc. of very light coal-benzin; the slightly colored liquid is filtered while hot and agitated with 10 cc. of dilute sulphuric acid; the aqueous solution is mixed with excess of ammonia, shaken with 10 cc. of ether, the etherial liquid evaporated in a test tube and the residue boiled with solution of perchloric acid. In place of the latter a little water and 3 or 4 drops of concentrated sulphuric acid are added to the residue, and afterwards a very minute quantity of potassium chlorate. In either case, after boiling for some time, a beautiful intense fuchsin-like color is obtained, due to the presence of aspidospermina.—*Ber. Deutsch. Chem. Ges.*, 1881, p. 319.

RESEARCHES ON THE CONSTITUTION OF THE CINCHONA ALKALOIDS.

By O. Hesse.

Continued from page 112.

III. *Action of Acetic Anhydrid upon the Apo-bases.*—The conversion of the original cinchona alkaloids into the previously mentioned apo-bases could possibly depend upon the hydroxyl groups contained in the former suffering a change of position; on the other hand, it was not to be expected that in the quinia and quinidia derivatives two acetyl groups would be substituted for hydrogen. The conversion of the apo-bases in question into the acetic ethers was easily accomplished; the pure bases, dried at 100°C., were dissolved in a sufficient quantity of acetic anhydrid; this solution was allowed to stand for some hours at 60 to 80°, and then evaporated at the same temperature after the addition of a little water. The amorphous residue obtained was taken up with cold water, the compound ether precipitated by ammonia, and extracted by shaking with ether. After washing the etherial solution with water, and treating with animal charcoal, it was allowed to evaporate slowly, when the compound ethers were left in the form of slightly yellowish residues which permit of being well dried at 100°C., becoming brittle on cooling, and with the exception of the diapocinchonia ether furnish white powders. All dissolve readily in ether, chloroform and alcohol, possess a bitter taste and slightly alkaline reaction; are very sparingly soluble in water, but readily in dilute hydrochloric acid, from which solution they are precipitated by ammonia or caustic soda in an amorphous, resinous form.

With dilute sulphuric acid the apoquinia and apoquinidia ethers produce solutions having a blue fluorescence, which is not shown by the compound ethers of the other apo-bases. The alcoholic solutions of the first two compound ethers give upon the addition of chlorine and ammonia an intense dark green coloration, while the other compound ethers do not possess this property. These distinctions are dependent upon the fact that in apoquinia and apoquinidia two atoms of hydrogen were exchanged for acetyl, and bodies formed which in respect to their constitution resemble the acetic ethers of the original bases, quinia and quinidia, only that instead of the *methoxyl group* they contain an *acetoxyl group*. If these bodies be boiled with an alcoholic solution they are decomposed according to the equation:

$$C_{19}H_{20}(C_2H_3O)_2N_2O_2+2H_2O=C_{19}H_{22}N_2O_2+2C_2H_4O_2$$

into apoquinia or apoquinidia and 2 molecules of acetic acid.

The apocinchonidia and apocinchonia ethers, on the contrary, are decomposed under these circumstances into the respective apo-base and 1 molecule acetic acid:

$$C_{19}H_{21}(C_2H_3O)N_2O+H_2O=C_{19}H_{22}N_2O+C_2H_4O_2.$$

From the compound ether of diapocinchonia the amorphous alkaloid used is inversely formed in a corresponding manner.

Diacetylapoquinia, $C_{19}H_{20}(C_2H_3O)_2N_2O_2$, deviates the plane of polarization to the left, dissolved in alcohol, —61·8°; and in water, with 3HCl, —107·5°. Its *chloroplatinate* is obtained as a dark yellow flocculent precipitate, which soon becomes crystalline. The *gold salt* is a beautiful yellow, amorphous, flocculent precipitate, which soon forms an agglutinate mass.

Diacetylapoquinidia, $C_{19}H_{20}(C_2H_3O)_2N_2O_2$, naturally deviates the plane of polarization to the right, dissolved in alcohol, +40·4, and in water with 3HCl, +78·4°. The alkaloid precipitated from the acid solution by ammonia forms a white resin, which, when perfectly dry, melts at about 60°C. Its *chloroplatinate* is a yellow, flocculent, amorphous, afterwards crystalline, precipitate.

Acetylapocinchonidia, $C_{19}H_{21}(C_2H_3O)N_2O$, rotates to the left, dissolved in alcohol, —61·8°, and in water with 3HCl, —87·9°. The *chloroplatinate* is a dark yellow precipitate, at first amorphous, but afterwards crystalline. The *gold salt* is a beautiful yellow, amorphous, flocculent precipitate, insoluble in cold water.

Acetylapocinchonia, $C_{19}H_{21}(C_2H_3O)N_2O$, rotates to the right, dissolved in alcohol, +71·4°; in water, with 3HCl, +97·9°. Its *chloroplatinate* is a pale yellow, amorphous, flocculent precipitate.

Diacetyldiapocinchonia $C_{38}H_{42}(C_2H_3O)_2N_4O_2$ dried at 100°C. becomes rather darkly colored. It is remarkable that in alcoholic solution it has no perceptible action on polarized light, while, dissolved in water with 3HCl, its action is = +26·1°. It is probable that the alkaloid in alcoholic solution is not entirely devoid of action on polarized light, but that it is so slight that it can only be determined by the application of larger quantities. The *chloroplatinate* is an orange-yellow, amorphous, flocculent precipitate, and the *gold salt* is a beautiful yellow flocculent precipitate.

IV. *Action of Highly Concentrated Hydrochloric Acid*[1] *upon the previously described apo-bases, and the respective original alkaloids.*—If the primary apo-bases, apoquinia, apocinchonidia and their isomers, be heated with highly concentrated hydrochloric acid for six hours, in sealed tubes, at 140 to 150°C., they are converted by absorption of hydrochloric acid into hydrochlorapo compounds, in which generally 3 molecules of hydrochloric acid are contained in combination with 1 molecule of the base, but of which only 2 molecules are indicated by nitrate of silver. If the contents of the tubes be mixed with half the volume of water, the compounds, for the most part, separate out.

The diapocinchonia is not altered when subjected to the same treatment with highly concentrated hydrochloric acid.

The same hydrochloric compounds are obtained when the respective original substances are subjected to the action of highly concentrated hydrochloric acid under the conditions stated; operating with quinia and quinidia, or their salts (hydrochlorate, sulphate), the formation of methyl chloride is observed, which, by the pressure produced in the tube, condenses in part to a mobile, strongly refractive liquid. With cinchonidia and its isomers no methyl chloride is formed, and no pressure is therefore produced in the tubes. By the same treatment cinchonia yields, besides hydrochlorapocinchonia and a little apocinchonia, also *traces of diapocinchonia.*

From this statement of results it is manifest that the bodies obtained by Zorn are not direct derivatives of quinia, cinchonia, etc., but that they are deducted from apoquinia, apocinchonia, etc., so, indeed, that to each molecule of the apo-base a molecule of hydrochloric acid had become annexed.

Hydrochlorapoquinia, $C_{19}H_{23}ClN_2O_2+2H_2O$.—The pure dichlorhydrate of this base may be prepared according to the method of Zorn ("Journ. für prakt. Chem.," [2], 8, 283). For the preparation of the alkaloid this salt is dissolved in lukewarm water and the alkaloid precipitated with a slight excess of ammonia. The voluminous precipitate obtained is washed with water and dried by exposure to the air, when it forms white irregular masses, which may be reduced to a white powder. The alkaloid is precipitated from its solution in acids at the ordinary temperature by ammonia or caustic soda in the form of delicate white flocks, which dissolve readily in alcohol, chloroform and

[1] The highly concentrated acid was formed by saturating the ordinary pure concentrated acid, at —17°C., with hydrochloric acid gas.

ether; this precipitate is apparently crystalline when produced at an elevated temperature. Ammonia, caustic potassa and caustic soda dissolve the alkaloid but slightly; it possesses an alkaline reaction in alcoholic solution and is lævogyrate, dissolved in alcohol, —149·1°, and in water with 3HCl, —245·7°. Its melting point is at 160°C (uncorr.). Its acid sulphuric acid solution shows no fluorescence, with chlorine and ammonia, however, it gives in alcoholic solution a yellow coloration. With hydrochloric acid it forms an acid salt, $C_{19}H_{23}ClN_2O_2,2HCl+3H_2O$, crystallizing in colorless needles, which are very difficultly soluble in moderately dilute hydrochloric acid, but dissolve very readily in water and alcohol.

Zorn analyzed the compound which had been dried in vacuo over potassium hydrate and it contained only $1H_2O$.

The *chloroplatinate* is a dark yellow, flocculent precipitate, at first amorphous, but afterwards becoming crystalline.

Hydrochlorapoquinidia, $C_{19}H_{23}ClN_2O_2$.—If the contents of the tubes[1] be mixed with some water, the dichlorhydrate of hydrochlorapoquinidia separates in crystals, which can be purified either by recrystallizing from dilute hydrochloric acid or by treatment with hot alcohol, in which case it remains undissolved.

The aqueous solution of the salt is then precipitated with a slight excess of ammonia, and the alkaloid, which is obtained in delicate white flakes, washed with cold water and dried by exposure to the air, when it forms almost colorless lumps, yielding a white powder. The hydrate contains $2H_2O$.

The alkaloid dissolves readily in ether and alcohol and slightly in boiling water; the latter solution becomes turbid upon cooling, apparently separating crystals. The alcoholic solution is colored yellow (not green as stated by Zorn) upon the addition of chlorine and ammonia. The alkaloid melts at 164° (uncorr.) and assumes thereby a brown color. Its solution in alcohol rotates +203·7°, and in water with 3HCl+258·4°. Its solution in dilute sulphuric acid shows no fluorescence, and is precipitated by ammonia or caustic soda in white flakes, the liquid at the same time assuming a yellow color. The

[1] Among eight tubes which had been charged with crystallized quinidia and highly concentrated hydrochloric acid, one was found in which glittering crystals had separated, insoluble in boiling water and in dilute and concentrated hydrochloric acid. They were filtered off before precipitating with water, but in consequence of the small amount obtained have not yet been examined.

alkaloid forms apparently only acid salts, of which only the dichlorhydrate and the chloroplatinate were more closely examined. The former is in small, colorless, six-sided scales, which in a certain position appear dichroic, dissolve quite readily in water, but very difficultly in moderately strong hydrochloric acid and in alcohol, and contain no water of crytallization. The chloroplatinate is a flocculent precipitate, changing into glossy orange-colored crystals.

Hydrochlorapocinchonidia, $C_{19}H_{23}ClN_2O$.—As already stated this alkaloid is formed by the action of highly concentrated hydrochloric acid upon apocinchonidia, and, therefore, also from cinchonidia, β-cinchonidia and homocinchonidia, as these by treatment with hydrochloric acid are first transformed into apocinchonidia. Zorn believed to have obtained at once the pure base by the precipitation of the acid solution with ammonia; the results obtained by the author in about twenty experiments were unsuccessful, a certain amout of apocinchonidia being always present. If the contents of the tubes be concentrated on the sand-bath in a shallow vessel, the solution solidifies to a compact mass of crystals, consisting of the dichlorhydrate of hydrochlorapocinchonidia, while the apocinchonidia remains dissolved in the mother-liquid. As this mass, however, is very slippery, and by pressing passes for the most part through the press-cloths, etc., a great loss of material would be sustained and only a small amount of pure dichlorhydrate be obtained. The following method gives good results: The mixture in question is dissolved in dilute sulphuric acid, to the hot solution an equal volume of alcohol is added, and alcoholic ammonia by drops until litmus paper is only slightly reddened; the alcohol is then evaporated, when the hydrochlorapocinchonidia will separate, and may be purified by recrystallization from boiling alcohol.

This separation is founded upon the fact that apocinchonidia neutralizes sulphuric acid, while the other base does not possess this property. Another process of separation is based upon the hydrochlorapocinchonidia sulphate crystallizing well from water, while the apocinchonidia sulphate is amorphous and freely soluble.

The hydrochlorapocinchonidia obtained from boiling alcohol is in colorless scales of a silky lustre, difficultly soluble in ether, chloroform, cold and hot alcohol, and melting at 200°C. (uncorr.) It is lævogyrate; the deviation of the alcoholic solution, on account of the slight concentration, could not be observed with the proper precision; in water with 3HCl it is —142·2°. The hydrochloric acid solution gives,

upon the addition of ammonia or caustic soda, a white voluminous precipitate, which consists at first of amorphous flakes, but afterwards becomes crystalline. The *acid sulphate* is obtained by dissolving the base in dilute sulphuric acid, and evaporating at about 60°C.; it forms delicate concentrically grouped needles, which are rather difficultly soluble in cold water.

The *dichlorhydrate* is obtained by the direct evaporation of the contents of the tube, recrystallized from a very small amount of water, and then separated from the mother liquid by placing it between bibulous paper, which should be repeatedly renewed. It is quite hygroscopic; dried in the exsiccator, it still lost a little water at 120 to 130°C.

The *chloroplatinate* is a dark yellow, amorphous, flocculent precipitate.

Hydrochlorapocinchonia, $C_{19}H_{23}ClN_2O$, is formed on treating apocinchonia, cinchonia or certain salts of the latter, with highly concentrated hydrochloric acid; traces of diapocinchonia are also produced and unchanged apocinchonia remain dissolved on mixing the contents of the tube with half the volume of water, while the dichlorhydrate of hydrochlorapocinchonia separates, and may be purified by recrystallizing from water containing hydrochloric acid. If the pure salt be then dissolved in boiling dilute alcohol, and a sufficient amount of ammonia added upon cooling, the base is obtained in delicate, colorless, anhydrous needles. It melts at 197°C. (uncorr.), is sparingly soluble in ether, chloroform and absolute alcohol, almost insoluble in water, and quite insoluble in caustic soda. Its alcoholic solution reacts feebly alkaline, and is dextrogyrate, in alcohol $+205{\cdot}4°$, and in water with 3HCl $+208{\cdot}0°$. It dissolves very readily in dilute acids, and is precipitated from these solutions by an excess of ammonia or sodium hydrate in white, voluminous flakes, which soon become crystalline; with the acids it forms apparently only acid salts.

The dichlorhydrate forms colorless, shining, pointed, six-sided prisms, dissolves readily in pure water, but slightly in water containing hydrochloric acid, and contains no water of crystallization.

The *chloroplatinate* is a dark yellow, amorphous, flocculent precipitate.

V. *Action of Acetic Anhydride upon the hydrochlorapo-bases.*—It remained only to examine whether the hydroxyl groups contained in the apo-bases are transferred unchanged by the conversion of the latter

into the hydrochlor compounds. To this purpose the hydrochlorapo-bases were treated for some hours with acetic anhydride between 60° and 80°C.; after the addition of water, the solution was evaporated at the same temperature, the residue taken up with cold water and precipitated by ammonia. The precipitate was then shaken with ether, this solution washed with water, and in some cases also treated with animal charcoal, then allowed to slowly evaporate. By this treatment the acetic ethers of the hydrochlorapo-bases were obtained, and in accordance with former observations, with hydrochlorapoquinia and hydrochlorapoquinidia the diacetyl ethers, with the others the monacetyl ethers. All of these compounds are easily saponified by boiling with alcoholic potassa solution, when the hydrochlorapo-bases are again regenerated.

Diacetyl-hydrochlorapoquinia, $C_{19}H_{21}(C_2H_3O)_2ClN_2O_2$, is obtained from ether in beautiful colorless prisms, which melt at 184°C. (uncorr.) It dissolves readily in dilute sulphuric acid, produces, however, neither with this nor with acetic acid a blue fluorescence. Ammonia and caustic soda give white, flocculent precipitates, which dissolve quite readily in the latter precipitant. The alkaloid is lævogyrate, dissolves readily in alcohol and chloroform, but with difficulty in ether. Its *chloroplatinate* is a beautiful yellow, flocculent precipitate, at first amorphous, but soon becoming crystalline.

Diacetyl-hydrochlorapoquinidia, $C_{29}H_{21}(C_2H_3O)_2ClN_2O_2$, is in small, colorless, rhombic scales, melting at 168°C. (uncorr.), sparingly soluble in ether, but readily in alcohol and chloroform. It has a bitter taste, and shows in alcoholic solution a decided alkaline reaction; its solution in dilute sulphuric acid shows no fluorescence, and its alcoholic solution is not colored by chlorine and ammonia. Its rotation for the solution in water with 3HCl is +94·6°. This solution gives with an excess of ammonia or caustic soda white flocculent precipitates, which are soluble to some extent in the precipitant. The *platinum salt* is a yellow, flocculent precipitate.

Acetyl-hydrochlorapocinchonidia, $C_{19}H_{22}(C_2H_3O)ClN_2O$, is in white shining prisms, melting at 150°C. (uncorr.), dissolves quite readily in ether, alcohol and chloroform, and very readily in dilute acids; ammonia produces in the latter solutions a white flocculent precipitate, which dissolves to a considerable extent in the precipitant. The alkaloid, like the original substance, deviates the plane of polarized light to the

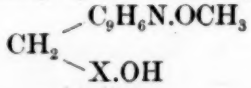
left; in water with 3HCl —54·3°. The *platinum salt* is a dark yellow, amorphous precipitate, which gradually becomes crystalline.

Acetyl-hydrochlorapocinchonia, $C_{19}H_{22}(C_2H_3O)ClN_2O$, is an amorphous varnish-like mass which melts far below 100°C., dissolves readily in alcohol, ether, chloroform and acetone, slightly in water, readily in acids, and is precipitated from the latter solutions by ammonia or caustic soda in a resinous form. Alcoholic potassa solution upon warming causes the rapid separation of hydrochlorapocinchonia. It possesses an alkaline reaction, and deviates the plane of polarized light to the right; in alcohol +108·0°; in water with 3HCl +118·8°.

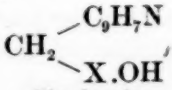
Its *platinum salt* is a dark yellow, flocculent precipitate, difficultly soluble in water.

Concluding Observations.—The above researches have indubitably shown that quinia, cinchonidia, and their isomers, each contain one hydroxyl group, which they are capable of exchanging for acetoxyl. These hydroxyl groups could still be met with in the last derivative products in the hydrochlorapo-bases, proving the incorrectness of Zorn's views that one hydroxyl group is replaced by chlorine. It was further found that in the acetic ethers of cinchonidia and homocinchonidia the character of the respective base was retained, and from them, therefore, in the one case cinchonidia, and in the other homocinchonidia could again be regenerated. This difference may possibly depend upon the condition that the respective hydroxyl groups in these two bases do not occupy the same position; on treating these bases with hydrochloric acid, however, a molecular change takes place by which this distinction disappears.

From the admirable researches of Butlerow and Wischnegradsky ("Ber. der deutsch. chem. Ges.," xi, p. 1253, and xii, p. 1480), it follows with certainty that quinia, like cinchonia, contains besides a chinolin nucleus, also a pyridin nucleus. If it be further considered that both bases by oxidation with potassium permanganate in sulphuric acid solution eliminate the CH_2 group, and form formic acid, and that the same group under other conditions passes into COOH, which then remains combined with the chinolin nucleus, it is manifest that both alkaloids, and certainly also their isomers, may be represented with great probability by the following formulas:



Quinia.



Cinchonia.

From the group X, which is still unknown in its parts, there would sometimes be formed ethylpyridin and acetic acid, and sometimes oxalic acid and ammonia, according to the method of action. By the transformation of quinia into chitenin the methoxyl remains perfectly intact, while the CH_2 group, on the contrary is eliminated.

$$CH_2 = C_{18}H_{18}N_2 \begin{cases} OCH_3 \\ OH \end{cases} + 4O = C_{18}H_{18}N_2O_2 \begin{cases} OCH_3 \\ OH \end{cases} + CH_2O_2$$

In a similar manner cinchotenin is formed from cinchonia, and cinchotenidin from homocinchonidia.

$$CH_2 - C_{18}H_{19}N_2.OH + 4O = C_{18}H_{19}N_2O_2.OH + CH_2O_2.$$

Using chromic acid as the oxidizing agent, the group X is apparently destroyed; CH_2 is transformed into COOH; on the one hand quinic acid (oxymethylchinolincarbonic acid) $COOH.C_9H_5N.OCH_3$, and on the other hand chinolincarbonic acid are produced.

We have seen that quinia, cinchonidia, and their isomers, by the treatment with hydrochloric acid suffer a molecular change, and that at the same time, in the case of quinia and quinidia, methyl is eliminated:

$$C_{19}H_{20}N_2 \begin{cases} OCH_3 \\ OH \end{cases} + HCl = CH_3Cl + C_{19}H_{20}N_2.(OH)_2.$$

The new bases manifested themselves generally as unsaturated compounds, in that each took up one molecule of hydrochloric acid. Whether now this addition took place on the group X or on the chinolin group cannot yet be decided with certitude. The fact that the bodies obtained from apoquinia and apoquinidia show no fluorescence in sulphuric acid solution would perhaps indicate that hereby the oxymethylchinolin group, which evidently causes the fluorescence of the bases in question, becomes altered.

It is worthy of notice that hydrochlorapocinchonia in sulphuric acid solution is attacked with great difficulty by potassium permanganate, and we have, therefore, possibly in this body a substance with a closed chain of atoms.

The author considers it, therefore, very probable that the hydrocinchonia of Caventou and Willm, which Skraup now calls cinchotin, is likewise a body with a closed chain of atoms, a true hydroderivative of cinchonia, and, for the reason just stated, offers greater resistance to oxydation than the cinchonia itself.

The formation of diapocinchonia by the action of hydrochloric acid upon apocinchonia may be caused by apocinchonia showing a

much greater tendency to enter into reaction than the other bases, and that therefore two molecules of the same combine to form the diapobase: $C_{19}H_{22}N_2O=C_{19}H_{22}N_2O$.

Although the facts here presented may permit of a little insight into the constitution of quinia, cinchonia, and their isomers, yet we are still far removed from the position of determining the perfect structure of the bodies in question. That this latter aim will be attained the author has not the least doubt, but he does not believe that the formation from their parts, *e. g.*, from chinolin or pyridin, as now maintained by many, will be successful.

Alkaloids of Quebracho Bark.—O Hesse has satisfied himself that Wulfberg's assertion concerning the identity of Fraude's aspidospermina with Hesse's paytina is incorrect. Hesse has also isolated a second alkaloid, *quebrachina*, which has the composition $C_{21}H_{26}N_2O_3$, crystallizes in small, white, anhydrous prisms, melts at about 215°C. (uncorr.), undergoing partial decomposition, dissolves readily in hot, slightly in cold alcohol, and is sparingly soluble in ether. Its solution in pure sulphuric acid has a bluish color, becoming darker in a few hours, and in the presence of lead peroxide is of a magnificent blue. A similar blue color is produced by sulphuric acid in the presence of molybdic acid or of potassium bichromate. Boiled with perchloric acid solution a yellow-colored liquid is obtained. Though these reactions are similar to those of strychnia and curarina, Dr. Petzoldt found it to differ from them in its action upon frogs; however, 0·04 gram was sufficient to kill a small rabbit.

Quebrachina is a strong base. Its sulphate, $(C_{21}H_{26}N_2O_3)_2.H_2SO_4+8H_2O$, forms colorless short quadrangular prisms, which are freely soluble in alcohol and water. The hydrochlorate is in similar crystals, very sparingly soluble in cold, but readily so in hot water. The salts with other acids are likewise crystallizable and mostly sparingly soluble in water.

Of quebrachina 0.28 per cent. was obtained; of aspidospermina only 0·17 per cent. The new alkaloid, and three other alkaloids observed in quebracho bark, will be further investigated by the author. —Reprint from *Ber. der. Chem. Ges.*, 1880, p. 2308.

CHEMICAL NOTES.

By Prof. Samuel P. Sadtler, Ph.D.

Inorganic Chemistry.—*On the Position of Boron in the List of Chemical Elements.*—A. Etard proposes to place boron at the head of the vanadium family of elements, forming a group intermediate between that of phosphorus and that of carbon. This juxtaposition of boron to the phosphorus group is supported by the existence of the compounds BCl_3 and $BOCl_3$, recently discovered by Councler (this journal, 1879, p. 124), and by the existence of boric triethide, or triethylborine, which is analogous to triethylphosphine in composition and properties. The relations of vanadium to the phosphorus group have been established by Roscoe, and the labors of Deville and Troost have done as much for niobium and tantalum. Boron and vanadium are both grey, pulverulent, carbon-like substances, combustible and infusible; both combine with chlorine, forming BCl_3 and VCl_3, and their oxychlorides $BOCl_3$ and $VOCl_3$ are yellow fuming liquids. Boron and vanadium, like the other members of the group, B, V, Nb, Ta, have also the somewhat rare property of directly absorbing nitrogen. The author will, in a subsequent communication, describe the properties of an oxide of boron, B_2O_5, corresponding with V_2O_5 and P_2O_5.—*Compt. Rend.*, 91, 627—629.

Spontaneous Combustion Engendered by Nitric Acid.—The question whether nitric acid is able to cause an ignition of vegetable tissue has often been discussed, without apparently having been settled. K. Kraut describes some experiments which seem to settle this matter in the affirmative. Taking a square wooden box, some 25 cm. length of side and about 40 cm. high, it was filled 15 to 20 cm. deep with hay, straw and sawdust, and upon this material was placed a small flask containing 25 to 100 ccm. of nitric acid, of at least 1·5 sp. gr., and then the space above filled loosely with hay or straw. The flask was then broken, and a wooden cover put on tightly. At the end of one or two minutes vapors are discernible, and in a few minutes more a thick white vapor, arising from the decomposition of the nitric acid, is seen, and this is followed by the smoke from the burning hay or straw. If at the end of 5 or 10 minutes the cover of the box be taken off, the interior is found filled with glowing coals, which blaze upon contact with the air, and frequently set the box itself on fire. Sometimes the inflaming takes place without any removal of the box

cover. With nitric acid of 1·45 an inflaming cannot be gotten.—*Ber. der Chem. Ges.*, xiv., p. 301.

ORGANIC CHEMISTRY.—*Formation of Levulinic Acid from Different Sugars.*—B. Tollens, who described several years ago the formation of levulinic acid from levulose, or fruit-sugar, has studied more fully the conditions of its formation, and has also shown that it can be formed, although with greater difficulty, and in relatively smaller amount, from both dextrose, or grape-sugar, and from milk-sugar. He also shows that this acid, derived from the sugars by the action of dilute sulphuric acid upon them, and possessing the formula $C_5H_8O_3$, is acetopropionic acid. In proof of this he has changed levulinic acid into normal valerianic acid, according to the reaction:

$$CH_3.CO.CH_2.CH_2.COOH+4HI=CH_3.CH_2.CH_2.CH_2.COOH+H_2O+4I.$$

Of the valerianic acid a series of metallic salts and ethers were formed, which were found in all respects to agree with those generally known.—*Ann. der Ch. und Ph.*, 206, p. 217.

Decomposition of Glucosides by Heat.—H. Schiff finds that on heating several of the glucosides to temperatures slightly above their fusing points they are decomposed, and in several cases in a very simple and exact manner. Thus æsculin, heated to 200°C., fused and solidified on cooling to a yellowish-brown mass, which showed that decomposition had commenced. On treating the mass with a little water, one part dissolved readily, and the solution yielded on evaporation over sulphuric acid an amber-colored glassy mass, which was recognized as glucosan. The portion less soluble in water was pure æsculetin. Complete decomposition had, therefore, taken place according to the reaction $C_{15}H_{16}O_9=C_9H_6O_4+C_6H_{10}O_5$.

A second preparation, heated to 230°C., gave the same result. The fusing-points of these two æsculin preparations were 204·5°C. and 205°C., considerably higher than that usually given.

Phlorizin was next taken. The preparation fused at 110°C. to a half-liquid opaque mass, which became porcelain-like on higher heating, and fused finally at 170° to 171° to a clear yellow liquid. If the phlorizin be heated just until this second fusion is reached, the mass consists of phloretin and glucosan.

$$C_{21}H_{24}O_{10}=C_{15}H_{14}O_5+C_6H_{10}O_5.$$

Arbutin, when free foom methylarbutin, fuses at 166° to 167°C., becomes yellowish in color at 190° to 200°C., but is not decomposed.

It solidifies on cooling to a glass, which towards 125°C. becomes again crystalline, and on reheating fuses only at 186° to 187°C.

Salicin fuses at 201°. When it is heated just to fusion it becomes crystalline on cooling, but if the fused mass be heated for several hours to 230° or 240° watery vapor gradually escapes, and the reddish-yellow mass remaining consists in part of saliretin and glucosan, although some undecomposed salicin always remains. Saligenin does not appear to be formed.

Helicin fuses at 174°C., and even at 185° to 190°C. gives very little salicylic aldehyd. The greater part is changed, as already observed by Piria, into a yellowish gummy mass, which is blackened at 240°C. and decomposes without previous fusion. The mass, which has been heated to 200°C., gives, when boiled with dilute sulphuric acid, salicylic aldehyd, and the neutralized solution yields glucosan.—*Ber. der Chem. Ges.*, xiv, p. 303.

A New Modification of Helicin.—Schiff finds that pure crystallized helicin, moistened with 1 per cent. nitric acid and then dried for some days in the air, and finally in an air-bath to 110° to 115°C., is changed, without other loss of weight than that caused by the difference of water of crystallization, into an amorphous modification. If by washing with warm water and then with alcohol the unchanged helicin is removed a gelatinous or pulverulent white mass is left, which shows no crystalline structure whatever, and after drying at 110°C., *in vacuo*, yields no water. When analyzed it gave exactly the figures for pure helicin. Its behavior is, however, quite distinct from that of the ordinary helicin. It is almost insoluble in water, alcohol, cold potassium hydrate and glacial acetic acid, in which the normal helicin is tolerably soluble. It is not colored yellow by potassium hydrate. It does not combine with ammonia, while normal helicin forms a compound readily soluble in water and alcohol. Anhydrous normal helicin fuses at 174°C., the amorphous becomes brown gradually when heated over 220°C., and decomposes completely at 250°C., without previous fusion. The amorphous helicin is decomposed into glucose and salicylic aldehyd, but requires, therefore, prolonged heating with 10 per cent. sulphuric acid, while the normal helicin is very easily decomposed. It can be changed back to the normal crystallized helicin easily when dissolved in warm, very dilute hydrochloric acid, from which the greater part will crystallize as normal helicin on cooling.—*Ibid.*, p. 317.

Alkannin, the Coloring Matter of Alkanet-red. — Carnelletti and Nosini have obtained this body from the commercial color (from *anchusa tinctoria*) by extracting it with dilute potash solution; this extract was shaken with ether to remove a reddish brown acid, an impurity present in the alkannin, obtained by Pelletier, Bolley and Weydler. The solution in potash, when saturated with carbon dioxide gas, gives a precipitate of alkannin which was further purified by solution in ether. It is obtained as a dark reddish-brown mass, with metallic lustre and is sparingly soluble in the ordinary solvents; it is most easily soluble in chloroform and glacial acetic acid. Its alcoholic solution is not changed by exposure to light or by continued boiling. The analytical results show its formula to be $C_{15}H_{14}O_4$, whilst Pelletier obtained $C_{17}H_{10}O_4$ and Bolley and Weydler $C_{35}H_{20}O_8$ from their analyses.

A barium salt containing 2 atoms of barium to 3 molecules of alkannin is obtained by precipitating the alcoholic solution with ammoniacal barium chloride.

Nitric acid or bromine in alkaline solution oxidizes alkannin to oxalic and succinic acids. Bromine acts upon solid alkannin but not on its solutions. Alkannin appears to be related to santalin.—*Ibid.*, xiii, p. 1514.

Alkanet-red, a Test for Magnesium Salts.—F. v. Lepel finds that the coloring matter obtained from the roots of the false alkanet (*anchusa tinctoria*) dissolved in a mixture of alcohol (2 parts) and ether (1 part) and diluted with water, exhibits an absorption spectrum composed of three bands. The violet colored solution produced by the addition of ammonium carbonate to this mixture is changed to blue by a minute quantity of a magnesium salt, and a characteristic fourth absorption band is formed. By the test 0·05 mgrm. in 1 cc. of liquid can be detected.—*Jour. Chem. Soc.*, Feb., 1881, p. 62.

On the Physiological and Physiologico-chemical Action of Chinolin. —The growing conviction of the close connection of the chinolin of coal tar with the quinia alkaloids gives an interest to all experiments in which the relations of the two are the subject of examination. Allusion has before been made (this Journal, 1879, pp. 233, 397) to the study of the oxidation products of chinolin and to the identity of these with the oxidation products of quinia and cinchonia. Julius Donath has now made a study of the action of chinolin upon the animal system as well as of the question of its antiseptic effects. He finds that chinolin has distinct antiseptic, antizymotic and anti-

pyretic properties; in 0·2 per cent. solution it prevents the putrefaction of urine, of glue and the lactic acid fermentation; in 0·4 per cent. solution it arrests completely the putrefaction of the blood and hinders in the highest degree the coagulation of milk; and finally in 1 per cent. solution it prevents the coagulation of the blood. With albumen it yields a compound coagulating at lower temperature.

The trial of chinolin in intermittent fevers the author has not as yet made as, fortunately, or unfortunately, very little malaria had prevailed in his neighborhood during that season.—*Ber. der Chem. Ges.*, xiv, p. 178.

JAFFERABAD ALOES.[1]

By E. M. Holmes, F.L.S.

About a year ago a specimen of a drug known in the Bombay market as Jafferabad aloes, was presented to the Museum of the Society by Dr. Dymock. In a letter received from him in July last, he states concerning it:

"I shall try and send some small plants of the Jafferabad aloe in a tin box. I want to have it compared with Dr. Balfour's aloe from Socotra, as the character of the drug yielded by it is similar to that of Socotrine aloes in not giving a red color with nitric acid. Jafferabad belongs to the African family who were admirals to the Mogul, and they may have introduced the plant. Difference of climate might account for the difference of the two drugs."

The difference here alluded to will be best understood by those who are familiar with the appearance of Socotrine aloes, if the appearance of the Jafferabad drug be here briefly described.

The specimen received from Dr. Dymock is a circular flattened cake, 7½ inches in diameter, and ¾ of an inch in thickness. Externally it is of a black color, and having a lustre not unlike that of pitch, to which at first sight the aloe bears some resemblance. The fracture is black and glassy, and very slightly porous, as if heat had been used in its preparation. The powder, when two pieces are rubbed together, is of a pale brown hue. When the glassy broken surface is breathed on, it becomes, after a time, of a brownish hue, and under the lens looks like aventurine, apparently owing to an immense number of minute cracks, causing the partial separation of minute translucent laminæ.

[1]Read at the Evening Meeting of the Pharmaceutical Society, March 2d, 1881.

The odor is a characteristic one, having some resemblance to that of socotrine, but less fragrant, as if it contained a trace of Barbadoes aloes and sandal wood. The taste of the decoction is not so pleasant as that of the Socotrine aloes; but the amount of matter insoluble in water seems to be equal in amount to that of the Socotrine aloes.

When submitted to the action of nitric and sulphuric acids no change takes place with the first named reagent, but when the vapor of nitric acid is passed over the mixture of Jafferabad aloes and oil of vitriol a slight greenish tinge is developed. This hue is, however, quite different from the distinct blue color developed by Natal aloes when similarly treated.

Dr. Dymock has cultivated the Jafferabad aloes plant in his garden, and it flowered at the end of last September. A few of the blossoms which he sent me have been submitted to Mr. J. G. Baker, of Kew, who has recently paid considerable attention to this group of plants, and he considers, so far as it possible to determine from the flowers alone, that they belong to *Aloe abyssinica*. Dr. Dymock collected some of the aloes from the Jafferabad plant in his garden and found it to give the same reaction as Socotrine aloes, and as he obtained the same results as with the aloes imported from Jafferabad there can be little doubt that the species of aloe cultivated in his garden is the source of the drug bearing that name.

A specimen of Mocha aloes in irregular masses, which was obtained in the London drug market last year, gives exactly the same faint greenish color when mixed with strong sulphuric acid and the vapor of nitric acid is blown over it. The powder is more of a reddish-brown hue, like that of catechu, and the odor slightly different. The surface has the pitch-like appearance of Jafferabad aloes, but it seems to have been prepared with less care, which might account for the slight difference in odor, and as according to Dr. Pereira, "Materia Medica," vol. i, p. 102 (4th ed.), it is imported from Muscat, lower down the Persian Gulf, it seems probable that it may be yielded by the same species of aloes. I hope to receive specimens of the Jafferabad aloe from Dr. Dymock shortly, when the identity of the species can doubtless be set at rest.

My excuse for bringing forward incomplete information at the present time must be that it seemed desirable, while the drugs from Socotra, kindly presented by Professor Balfour, were under discussion, to mention an aloes which seemed so nearly related to the Socotrine variety.—*Pharm. Jour. and Trans.*, March 5, 1881.

New Drop Attachment for Bottles.—The engraving shows a simple device for delivering liquids from bottles in drops as slowly or rapidly as may be desired. It consists of a tube inserted iu the stopper and provided with a flexible air bulb for blowing air into the bottle, and another tube inserted in the stopper through which the liquid escapes. By pressing upon the rubber bulb with more or less force the liquid is made to escape with more or less rapidity.

Bravais' Drop Attachment for Bottles.

This device will be found particularly advantageous in dropping medicines, and it may in many instances replace the pipette used by chemists. This invention was recently patented by Mr. Raoul Bravais, of Paris, France.—*Scientific American*, March 5, 1881.

Quinia from Coal Tar.—The New York "Commercial Bulletin" notices a report current in that city, that a Liberty street firm had applied for a patent for a process to manufacture quinia from coal tar.

It is stated that the firm has been interested with a chemist to accomplish this result for several years, and that the efforts have been crowned with success. In the "Chemical Notes" published in this journal during the past year, the readers have been kept informed of the results obtained by Skraup, Koenigs, Hesse and others, in their endeavor to determine the exact composition of the cinchona alkaloids, which, when once known, will doubtless lead to their synthetical production. Whether such a result is so near being accomplished as the rumor mentioned above indicates, remains to be seen. But of the importance of the synthetical production of quinia there can be no doubt, when it is remembered that in 1879 $2,000,000 worth of cinchona bark was imported, most of which has, doubtless, been used in the manufacture of this indispensible alkaloid. J. M. M.

Chian Turpentine is derived from Pistacia terebinthus, *Lin.*, the *terminthos* and *terebinthos* of ancient authors, and at present called

skinos. The peasants carry the wood of this tree, packed upon asses, into the towns, where it is sold to bakers for heating their ovens. In the island of Scio (Chio), where also the species yielding pistacia nuts and mastic are found, incisions are made into the turpentine pistacia, and the exuding oleoresin is collected in large shells and in clay vessels fastened beneath the incisions; occasionally this turpentine in oyster shells is offered in the bazaars.

A similar exudation is the Cyprian turpentine, to some extent collected in Cyprus, and the plant is found throughout Greece, where, however, it is not incised. The soil in the neighborhood of such plants, which had been wounded or cut down, I have sometimes found mixed with resin, and believe that a turpentine like that of Scio and Cyprus may also be obtained in Greece. During the coming summer a sufficient quantity will probably be collected to supply the demands of commerce. X. LANDERER.

CONCENTRATED SOLUTION OF QUINIA.

FORT BROWN, TEXAS, March 25, 1881.

Editor American Journal of Pharmacy.

DEAR SIR:—I notice in the March number of the "journal," page 136, a formula for "Lent's solution of quinia," for hypodermic use.

It is not stated when it was first used, but the formula is almost identical with a solution I first made in May, 1874, for every-day use in giving that remedy in the Post Hospital at Fort Stockton, Texas, (the formula for which I had the honor of furnishing you, with the request that you would publish it for the benefit of the pharmacist, especially in the army, but it was never noticed.[1])

At the time I constructed my formula, I had never seen one of a strength exceeding 30 grains to f℥i, and even *that* was called a concentrated solution. I have continued using my solution, which I have no difficulty in keeping any required length of time, and their is *no* crystallization except in very cold weather, and then it is redissolved very readily by warming.

My formula is as follows:

℞	Quiniæ sulphat., ...	grs. 480
	Acid. sulphur. dil., ...	f℥vi to f℥i
	Glycerinæ, ...	f℥vi
	Aquæ distill., ...	ad f℥vi
	Misce sec. art. and filter.	

[1] We have no recollection of ever having received the letter referred to.—*Editor.*

I prepare it *without* heating, and find the f℥vi of dilute acid sufficient in warm weather, but in winter the larger quantity is required to maintain the solution. This solution contains exactly 10 grains in each f℥i, while Lent's is not so strong, in fact the formula referred to does not state the exact strength.

I shall always believe, unless the contrary is shown, that I was the *first* to make use of so concentrated a solution of quinia for any purpose, and I have given the formula to a number of the stewards of the army, who have, without exception, employed it with success.

S. W. Reynolds, *Hospital Steward U. S Army.*

PRECAUTIONS IN DISPENSING POISONS, Etc.

By Robert F. Fairthorne, Ph.G.

The caution necessary in dispensing poisons can scarcely be too great, not only on account of the protection which the public expects from us as pharmacists, but on account, also, of that which is due to our own interests. When we take into consideration the fact that a fellow-mortal may be deprived of life, or rendered an invalid for years, through some dangerous article being taken by mistake for some innocent substance, through not being properly marked or labeled, it becomes us to consider well the best means for insuring safety. Every safeguard should be employed.

When dry articles of a poisonous character are dispensed, not only should they be labeled, but wrapped up in at least two papers, *both* of which should have printed labels of the name of the article on it, and the word poison in bold letters. In addition to this the inner wrapper should have the name of the article and the word poison *written* on it. By this plan, even if the labels should be lost or removed, there would still be a means for identifying the drug and life, perhaps, saved.

This, too, might prove to be of value as evidence in poisoning cases, and it might be well if such a custom was universally adopted.

In dispensing prescriptions containing poisonous articles, it will not always be advisable for the pharmacist to mark poison on the bottle; a label with the word caution on it can, however, and should always be pasted on the bottle or package. The physician frequently orders such articles as arsenic, aconite and corrosive sublimate, in appropriate doses, and if the mixtures containing them were labeled poison many

nervous people would not take the medicine ordered for them. The practice of prescribing such substances as these in a concentrated form such as tincture of aconite, Fowler's solution, solution of the iodides of arsenic and mercury, has been frequently followed by fatal doses, such as a teaspoonful or more being taken by the patient in mistake for other liquids.

It has been proposed by some persons, unacquainted with either the pharmaceutical or medical profession, that all bottles and drawers should be labeled in English, as a means for preventing mistakes. I will venture to assert that no one with long experience in either profession can be found who believes that this would be the slightest safeguard; on the contrary, I believe that the danger of mistakes being made would be increased thereby, as there is greater similarity of terms, or in sounds of names, in English than in Latin. Black drop and black draught, for instance, ladanum and laudanum, chamomile, calomel, calamine, calamus, Jamestown weed and gentian, the former being frequently pronounced jimsen, can be named as having some similarity; also, May weed and May apple, antimonious tartrate of potassa and acid tartrate of potassa, and many other articles. Not only would there be danger from this cause, but from another, namely, the overconfidence in their own capabilities and discretion, which leads some individuals without adequate experience and knowledge to assume responsibilities not belonging to them, from which cause more mistakes have been made than from any other. No one whose mental faculties are so small as not to be able to become as familiar with the Latin used in naming drugs as though written in English should undertake to study the chemical and therapeutical characteristics and doses of medicines used with the view of prescribing or dispensing the same, as such intellects would not be capable of retaining sufficient information to enable them to do so with propriety.

The practice of dispensing medicines of a poisonous character in peculiar bottles, such as the corrugated, sanded and stellated styles, or bottles covered with diamond-shaped points, is to a certain extent a good one, if generally adopted; but until some law is passed compelling their use I think their employment may be open to objection on account of some druggists using such bottles and others not using those so marked, and because customers who had become accustomed to the use of these peculiar bottles for poisons only might fall into the

error of considering all medicines dispensed in ordinary bottles as non-poisonous.

The necessity of a knowledge of the chemical reactions of poisons in compounding prescriptions is apparent. The neglect to paste the label "shake the vial" on the bottle containing strychnia has been the cause of death through the patient taking an overdose when the last dose in the bottle was given, as nearly all the strychnia in the prescription was precipitated. This precipitation would take place in the presence of many substances in common use when solutions of strychnia, atropia, morphia, etc., are mixed with them, as Huxham's tincture, salicylate of sodium, etc. Again, some innocent substances are converted into a dangerous one, as calomel into a corrosive poison, when mixed with chloride of ammonium, nitro-muriatic or hydrocyanic acids.

Where there are two substances bearing considerable resemblance to each other, such as morphia sulphate and quinia sulphate, it is perhaps as well to keep them in bottles that differ both in appearance and size. It has been my practice to dispense quinia from the bottle as it comes from the manufacturer, whilst the morphia has been kept in a blackened bottle. It is also a good plan to paint the store bottles containing powerful poisons black, as a distinguishing mark, and those that are very strong, such as aconitia, atropia, etc., if kept in small vials and these again placed inside larger bottles can scarcely be dispensed in mistake for other substances.

Contrary to the practice in many stores I believe that mistakes can be avoided in many cases, or, I may say in most cases by leaving the bottles from which medicines have been taken for use in prescriptions on some part of the counter, especially devoted for the purpose, so that they may be examined before the customer leaves the store and each bottle compared with the ingredients of the prescription. This practice, although accompanied with some inconvenience, enables the proprietor or superintendent of the store to inspect each article employed in compounding, so that nothing need be left to the responsibility of inexperienced persons, whereas this cannot be done if the bottles are taken from the shelf and instantly replaced, unless some one could follow each movement of each individual so employed.

Another practice, which I think a good one, is to paste poison or caution labels on both sides of the bottles that require to be so marked when sent out of the store, so that there will be an additional safe-

guard for the customer, and in this connection I would state that I think the practice of selling laudanum without being marked poison is very reprehensible.

In addition to these precautions, I think the following articles which are in extensive use, when sold should be labeled with the word caution, namely: spirits of hartshorn, acetic acid, aromatic sulphuric and tartaric acid, chloroform, ether and benzin (on account of inflammability), bitter almonds, bitter almond oil (water and extract), tartar emetic and its preparations, cherry laurel water, weak solutions of carbolic acid (strong should be marked poison), wine of colchicum root, strong solutions of chloride of zinc, tinctures of digitalis and conium, tincture of iodine, santonin and the preparations containing it, artificial fruit extracts, alcohol, Goulard's extract, podophyllin, and as a general rule all liniments not containing poison, the latter, of course, should be so labeled.

I have written thus at length, feeling that one of the most important subjects and one requiring very great attention is, care in dispensing poisons.

New Seidlitz Powder.—In common colds, where a laxative is indicated Dr. E. J. Kempf recommends dissolving the tartaric acid of the Seidlitz powder together with 5 grs. ammonium chloride before mixing with the solution of Rochelle salt and sodium bicarbonate.—*Louisv. Med. News*, March 12.

Salicylic Acid for Bee Stings.—An Austrian paper recommends the following treatment: First remove the sting as quickly as possible with a forceps or by scratching with a finger, but never with the thumb and forefinger, because this squeezes more of the poison into the wound. Next squeeze the wound until a drop of blood comes out, and rub the place as large as a dollar with an aqueous or dilute alcoholic solution of salicylic acid. The effect is still better by injecting the salicylic acid into the wound with the hypodermic syringe. After this the spot is painted with collodion, to keep out the air. A sting treated thus causes little or no pain, slight inflammation and swelling, and is not followed by nettle-fever or lamenees in the most sensitive and nervous individuals.—*Oil and Drug News.*

SPONGES.

Sponges present a point still somewhat problematical as to their true position in the scale of animal life, and there are still many doubtful or imperfectly known facts pertaining to their organization. As a family, sponges are very remarkable for the lack of a definite and constant form, have various habits of growth, are insensible to irritation and powerless to move about. The known species number now about three hundred, and new ones are constantly observed, in view of which fact it is obviously impossible to describe, within the limits of this sketch, more than the prominent characteristics of the type. The description following may be referred more particularly to the sponges of commerce.

Milne-Edwards and others have considered each sponge as one separate and distinct individual; but Prof. Clarke, Dr. Lockwood, Prof. Grant and others, regard them as an aggregation of minute infusoria, each within its living cell, and they are considered to begin life as solitary animalcules, and only in associations of these does the characteristic sponge structure appear. Of course this reduces it still lower in the plane of animal life, because individuality is soon lost when many of the same species are brought together and coalesce. The mass then may be considered in its complete state as being composed of three parts, namely, the *skeleton*, known, when cleansed, to commerce as the sponge; the *fleshy matter*, by which this is surrounded; and third, the *spicules*, or little spines, by which the fleshy matter is held in place.

The skeleton is a fibrous mass of complicated network of more or less regularity in the meshes, and of different patterns in the various species. The fibre appears solid under the microscope, but in some species at least it contains within its interior another cylindrical thread, which usually becomes elegantly wavy or spiral under flexion, and probably adds to the elasticity. In some the skeleton is soft, compressible and very bibulous, from which there is a gradual passage into those of a rigid and compact texture, sometimes friable. The first are composed of a horny substance, and the varying excess of silicious or calcareous matter causes it to lose more or less elasticity, and impairs its usefulness. As the skeleton is secreted by the fleshy mass of the animal, which is an active eliminator of the salt of the ocean, it is attempted to group them upon considerations of their building propensities, and the toilet and domestic sponges generally affecting horn, or *keratose*, are grouped as "keratora." With an excess of lime, as *calcarea*, building with silex—*silicea*. Various varieties exhibit all the colors, and many are, while alive, very brilliant in appearance. Examining a toilet sponge, we find that the framework is covered with a membrane (not universal with all species), thin above, deep-brown on the sides and yellowish-brown towards the base. This investing membrane exhibits larger and smaller openings, is not spread smoothly, but appears irregularly covered with conical shaped points. Making a section of the still living sponge, we find the skeleton embedded in a glairy, gelatinous or albuminous substance, about the consistency of raw beef, with an exuding viscous, yellowish clear brown (in the bath sponge a clear gray)

slime, called milk by Greek fishermen. This investing flesh has so little resemblance to ordinary animal tissue that it is technically called "sarcode." In this tissue we perceive a system of canals or pores, which run downward in all directions and enter directly certain little cavities or chambers connected with circuitous passages, which finally lead to large outlets or "oscula." The pores, belonging only to the flesh, are not visible in the skeleton, are very small, yet, compared with the cells, very large. In some orders of sponges the outer walls of the flesh open anywhere and everywhere for the admission of food, and no well-defined pores are visible, but open as required.

Fig. 1.—Sponge (one-half natural size) attached to rock.

Prof. Grant first observed closely the ceaceless flow of liquid matter through and out of the living sponge. Another discussion has been had over the manner in which this is caused or maintained. Dutrochet, having made his celebrated discovery of that law of endosmose which regulates the transmission of fluids of unequal densities through organic membranes, was perhaps biased or prejudiced in applying the same law to the solution of this problem. At any rate, naturalists now agree that the flow is produced by the lashes or cilia, with which the unnumbered animalcules are each provided. The little chamber into which the pore opens has its wall lined with these uniciliated cells, and each lashes its cilium with vigor, and all harmoniously downward and inward, the effect vacuum above, the water, of course, passing in, being carried through the ramifications and out of the oscula with some vigor. Hurled along in the liquid are opaque masses, composed of excrementous particles, and at certain seasons ova and germicules, from which new beings are produced. We may consider the sponge mass as having a complete assimilating or digestive apparatus. The cells, or some of them, probably act as stomachal sacs, with the lashes for motors to attract food and repel refuse after the extraction of nourishment, which latter probably passes through the gelatinous mass into the general development. The sponge has such remarkable recuperative powers that one, being cut while alive, quickly rejoins, though not replaced in the same position. We show in Fig. 2 a group of living sponges.

Fig. 2—Living sponges.

Perhaps the most curious parts of the sponge structure are the *spiculæ*, or little spines, shown in Fig. 3. These, embedded in all parts of the sarcode, serve to bind the tissueless flesh in form. They serve as a natural felting, or as tiny anchors, generally composed of silex or lime, and are of an infinite variety of shapes, sometimes occurring separately and sometimes in bundles, generally in this case bound together with horny matter. The spicules of the "sheep's wool" are of the latter class, and under a low magnifying power will be found generally broken and frayed. Spicules of silex are the most common and most variable in shape, and present every gradation, from simple needle to many-pointed star. Spicules of the same material, but of various forms, are found in the same sponge, but seem to occupy certain definite positions—some are peculiar to crust, some to sarcode and others to margins of canals, etc. They cannot be considered as formed by crystallization, as many could not so be produced; they exhibit more or less of a central cavity, in some of which organic matter has been discovered. Being beautiful microscopic objects, they have excited much attention, especially as they are the most lasting parts of the structure, and are distributed not only over every known sea, being constantly dredged from the greatest depths, but they also in a large measure, in connection with other silicious bodies of like insignificance, go to form many large portions of the earth's surface. They occur in guano deposits, largely in the chalk formations, also in the tertiary formations in England, etc. Sponge tissue may often be observed in sections of agate, chalcedony, etc.

Nodular flints are believed to be fossil sponges, as are also the celebrated "moss agates." Fossil sponges of many species are found in many localities in this country, notably in Kentucky and Tennessee. Spicules predominate so far in some sponges as to render them valueless, and their absence is always essential to its domestic uses.

The sponge is propagated by an *ovum* or *germicule* cast from the parent at certain seasons, this being usually a ciliated cell, which, floating for awhile, at last settles for life on some hard substance, and, giving no signs of sensibility, yet undergoes a change, the gelatinous flesh is riddled and channeled, the fibrous framework is formed, and the sponge is complete.

The process of generation is involved in some doubt, but they seem to contain within themselves the power, and seemingly by germination or budding. These germicules are apparently produced in some of the cells, and pass through the sarcode to the large canals, from which they are ejected, sometimes being protected and surrounded at their exit by spicules.

The duration of life and rapidity of growth are not known, though in the Mediterranean it is agreed that the ground may be fished over again in three years. The period probably varies greatly in different latitudes, for the species are widely distributed over the seas; they are scarce and small in cold latitudes, and increase most abundantly in the tropics.

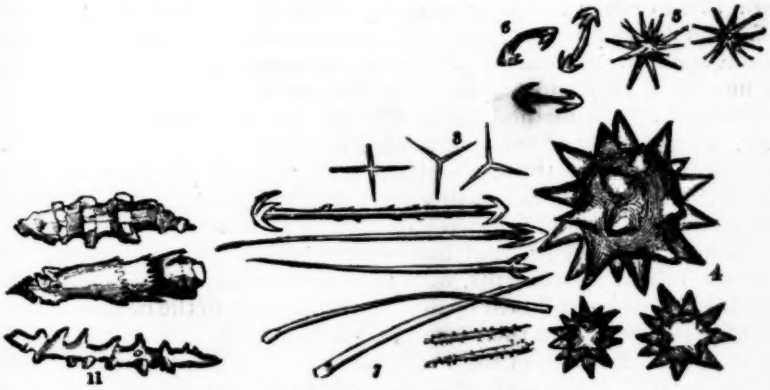


Fig. 3.—Spicules of various forms.

Many strange and beautiful forms occur among sponges, some of which have received popular names, as Feather, Fan, Bell, Lyre, Trumpet, Distaff, Peacock Tail, Neptune's Glove, Neptune's Car, Venus' Flower-basket, Glass Sponges, etc.

The cornucopia-shaped Glass sponge, the Venus' Flower-basket (*Euplectella speciosa*—the specially beautiful well-woven), is one of the rarest, and, as its name implies, one of the most beautiful varieties. It is found near the Philippine Islands. It resembles a structure of spun glass, and though apparently so delicate is yet quite strong; each thread, although of pure silex and seemingly solid, is really composed of a series of concentric tubes or cylinders, as if spun on a central thread. As the threads are of pure

silex, one might suppose them to be perfectly transparent; but, on the contrary, they are translucent, and have a most exquisite opalescence. The structure has a woven fabric, and as it progresses it takes on the most quaint little flounces, with the most delicate frilled edges imaginable, and all arranged with such charming grace and ease. The lace-like structure is so aerial a fabric, so quaintly graceful, and so deftly done in the putting together, that any embroidery would seem bungling in comparison.

The *Cliona.*—Sponges to which this name has been given have been observed to have the power of boring into substances the hardness of which might be considered a protection from such apparently contemptible foes. Shells, corals and solid rocks are broken up, and probably made available for the supply of the necessities of other creatures. The mechanism by which so low an animal produces so remarkable effects is still doubtful, but is attributed to a multitude of minute silicious crystalline particles adhering to the surface and set in motion by something analagous to ciliary action.

The Mediterranean and Red seas have from time immemorial afforded the finest sponges of commerce, and at the present time the most important sponge fisheries are those of the Grecian Archipelago and the coast of Syria, the products of which find their way to all parts of the world. The trade in sponges with Europe and America has of late greatly increased. Some three or four hundred boats are regularly engaged in the sponge fishery in these waters during the fishing season, which usually commences about the beginning of June and terminates at the close of October, the months of July and Augnst being the most favorable for the pursuit of the industry. The method pursued by the sponge fisher is about as follows: A boat's crew of four or five men will scatter themselves along the coast for two or three miles, in search of sponges under the cliffs and ledges of rock. Those of inferior quality are found in shallow waters; the finer qualities are only found at a depth of from 20 to 30 fathoms. The first are fished for with three-pronged harpoons, by which they are forcibly torn from their rocky attachments, with more or less injury to their textures. The finer kinds are collected by divers, who descend to the ocean's bed and carefully cut them from their fastenings with a knife.

The sponge fisheries of the archipelago yield a large annual product, but the quality is not so fine as that of the Syrian fisheries, while the Syrian sponges in turn are surpassed in dimensions and fineness of tissue by the product of the Barbary coast. The sponge fishery of these favored regions is conducted without intelligent direction or thought of preserving the supply, in consequence of which the product, though it has of late largely increased, must in time become restricted in quantity from the failure of the supply. Well informed writers on this subject, in fact, assert that it is only a question of time when the trade shall altogether cease, unless some reform in the existing state of things shall be introduced, as the demand which every year clears the submarine fields of these sponges causes such destruction that even the prodigious reproductive power which they possess is inadequate to keep up the supply.

To successfully counteract the rapid depletion of the sponge in these waters, it has been repeatedly proposed to naturalize the more valuable

species on the French and Algerian coasts, and to protect their cultivation by special laws. It has been conclusively demonstrated that sponges may be artificially propagated with little trouble, and with successful results, from cuttings of the living sponge, so that no serious difficulty would be met with on this score; but thus far, for a variety of reasons, no practical measures of this kind have been taken.

The sponge fisheries in American waters are by no means insignificant, the principal localities of the industry being the Gulf of Mexico, the Florida Keys and the Bahama Banks. The quality of American sponges, however, as compared with those of the Mediterranean, is inferior. The annual product of the American fisheries is, nevertheless, very considerable. The fine Syrian sponge is distinguished by its lightness, its fine flaxen color, its fineness of texture, and its cup-shaped form. This sponge is specially employed for toilet use, and commands a high price. The fine sponge of the Grecian Archipelago is scarcely to be distinguished from that of Syria, though generally it is weightier, not so fine in texture, and the holes with which it is pierced are larger and fewer in number. The sponges of American waters are coarser in texture, harsher, and wanting in flexibility.—*The Manufacturer and Builder*, March, 1881.

VARIETIES.

MAIZE AND MAIZENIC ACID.—The following are the conclusions drawn by Dr. Vauthier, in a brochure entitled *Etude sur le Maïs* (Zea Maïs) *et l'Acide Maïzenique* ("Archives Méd. Belges," August, 1880): 1. The action of Zea mais is always favorable in all affections of the bladder, whether recent or chronic. 2. Maizenic acid is the active principle of the stigmata of maize, and it alone contains the therapeutic properties. 3. The diuretic action is not constant; it is met with in cases of acute traumatic cystitis, and in cases of retention, but here the improvement in micturition is due to the recovery of the affected organs, and not directly to the action of the maizenic acid. 4. The best results are observed in uric and phosphatic gravel, in acute cystitis, whether simple or due to gravel, and in mucous or muco-purulent catarrh. 5. In the cases observed by the writer, the ordinary remedies for these affections had already been employod without benefit, while the maize never failed to effect a cure. In connection with the maize, simple and medicated vesical injections were employed. 6. Maizenic acid, moreover, has the power of dissolving calculi by its chemical action; and not only vesical calculi, but also all the other calcareous concretions that are met with in the human system. Hence its use seems indicated in cases of gout and rheumatism, as well as in affections of the urinary organs. The preparations used by the author were the infusion (10 parts of corn-silk to 100 of boiling water, with syrup *ad libitum;* dose, a tablespoonful every two hours), the extract in doses of one and one-half to three grains, and maizenic acid in doses ef one-eighth of a grain in pill or mixture.—*Med. News*, March, 1881, from *London Med. Record*, Jan. 15th-1881.

ON INULIN.—Kiliani has published a research upon inulin as an inaugural dissertation at Munich. The following are the conclusions of his paper: Inulin stands in the most intimate chemical relation to levulose. It appears to be the anhydrid of this body, and passes into it with such facility that in all reactions which require a long warming with water or need the presence of dilute acids the inulin is replaced by levulose. By nearly all reactions, therefore, these bodies yield the same products. Inulin is distinguished sharply from levulose in consequence of a property possessed by the latter in common with the simple sugars, of reducing the copper test and of fermenting under the action of yeast. Inulin neither reduces Fehling's test nor undergoes fermentation. Moreover, it does not form hydrogen addition products. Its hydrate, levulose, differs from dextrose in its oxidation-products; the latter affording, when oxidized with nitric acid or bromine and water, compounds which contain six carbon-atoms, saccharic (perhaps gluconic) acid; while levulose similarly treated affords bodies with a less content of carbon; glycolic and oxalic acids. This the author explains by supposing dextrose to be the aldehyd of mannite and levulose its ketone. Oxidation of both dextrose and levulose with silver oxide gives glycolic acid; but gluconic acid is probably first formed and then oxidized to glycolic and carbonic acids.—*Amer. Jour. Sci.*, Feb., 1881, from *Liebig's Ann.*, ccv, 145, Nov., 1880.

ON THE DIRECT PRODUCTION OF CHLOROFORM AND BROMOFORM.—Damoiseau has studied the action of porous bodies in causing the reaction of chlorine upon methyl chloride. A regular current of chlorine gas mixed suitably with methyl chloride is passed through a long tube filled with animal charcoal and heated to 250° to 350°. By washing with water the hydrochloric acid gas is removed, and the condensed product corresponds to the mixture employed. Chloroform is produced with great ease and uniformity in this way. Bromine acts similarly, producing from CH_3Br_2, CH_2Br_3, $CHBr_3$ and CBr_4. Acetic acid treated with 2, 4, 6 atoms of bromine in this way, gives carbon dioxide and brominated derivatives of formene. Chlorine and acetic acid gives chloroform in considerable quantity.—*Amer. Jour. Sci.*, March, 1881, from *C. R.*, xii, 42, Jan., 1881.

MINUTES OF THE COLLEGE.

The Annual Meeting of the Philadelphia College of Pharmacy was held at the Hall of the College, March 28th, 1881, Dillwyn Parrish, President, in the chair. Present, 27 members.

The minutes of the last stated meeting were read, and, on motion, approved.

The minutes of the Board of Trustees for January, February and March were also read by Wm. C. Bakes, Secretary, and, on motion, adopted.

By these minutes the College is informed that, of the late Class, one hundred and fory students had the degree of Graduate in Pharmacy conferred upon them, being the largest number of graduates for one year in the history of the institution.

At the last meeting the matter of the enlargement of the College building was brought before the Board, and, after an explanation of the intended improvements, accompanied by plans showing the designs of all the stories, the project was agreed to and a Finance Committee was appointed to raise funds to carry the same into effect, the intention being to erect a four story building with another lecture room, two laboratories, and other rooms suitable for class societies.

Caleb H. Needles asked for information regarding the action of the committee appointed by the Board to confer with the County Medical Society. Mr. Bullock, on behalf the committee, replied that the published report (see page 89 of the February number) contained the results of the conference, and that the questions raised by the circular of the Medico-legal Society had been considered fully by the "Drug Trade Association," in whose hands the matter now rested.

Thomas S. Wiegand, Librarian, reported that there had been added to the Library since last report fifty-five volumes by purchase, and that he has had forty-five additional volumes bound and placed upon the shelves. The report was, on motion, accepted.

CURATOR'S REPORT.

The Curator would respectfully report that there have been some additions to the Cabinet since his last report, but owing to the want of room and time, the arrangement of the specimens has been deferred. It is hoped, that with the increased facilities that the proposed alterations will afford, the museum may be made much larger, and the specimens easily accessible to all the of members.

JOSEPH P. REMINGTON, *Curator.*

Prof. Maisch stated that a large number of specimens of drugs had recently arrived from the Curator of the Pharmaceutical Society of Great Britain.

The report of the Curator was, on motion, accepted.

Henry N. Rittenhouse, Chairman of the Publication Committee read the following report which was accepted:

To the Officers and Members of the Philadelphia College of Pharmacy:

The Committee on Publication respectfully report, that the JOURNAL has been issued with the usual regularity. The Committee feel it due to Mr. T. S. Wiegand to express their obligation to him for oversight of the editorial department during the absence in Europe of the editor.

The Treasurer's report will show a satisfactory condition. The balance of money in his hands is not as large as it was the previous year, owing to the cost of the Decennial Index and a number of accounts not yet collected, but which are considered good.

Philadelphia, March 28th, 1881. HENRY N. RITTENHOUSE, *Chairman of Committee.*

The report of the Editor of the JOURNAL, John M. Maisch, was read and accepted, as follows:

To the Philadelphia College of Pharmacy:

Six weeks after the last annual meeting the Editor proceded on a trip to Europe, and during his absence extending through four months, the duties devolving upon him were assumed by the Publication Committee, and more especially by Mr. Thomas S. Wiegand, who kindly attended to the various details.

During the year ending with the present month seventy-three original papers were published, of which, twenty were abstracts from theses. The subject of the original essays related to materia medica 16, chemistry 17, pharmacy 29, and to other information of more general interest 11. These figures do not include editorial matters, original translations and those condensed abstracts from the scientific literature of foreign countries, which under the title of "Chemical Notes" were contributed during the year by Prof.

Sadtler, and under the title of "Gleanings from the Foreign Journals" by Mr. Louis von Cotzhausen, until his removal from Philadelphia last autumn.

Of the original papers, one author contributed 8 papers, two authors each 5 papers, one 4 papers, two authors each 2 and 3 papers, the remaining 41 essays being furnished by as many different authors, making a total of forty-nine authors, of whom twelve were members of the College contributing 28 papers. Fourteen of the papers were read at the Pharmaceutical Meetings, and of these four were by students of the College on subjects investigated in the College laboratory.

With the extended facilities for laboratory investigation which the College is about to inaugurate it is believed that the more advanced students may be induced to undertake original researches to a still larger extent than heretofore, and it is not unlikely that a plan could be devised, perhaps through the Committee of Instruction of the Board of Trustees, whereby such researches could be stimulated so as to be of direct benefit to the students undertaking them, and at the same time contribute to the interest of the Pharmaceutical Meetings. These meetings have now been conducted without interruption, the usual summer recesses excepted, since October 18th, 1870, a longer period, it is believed, than at any other time in the history of the College. That the information disseminated through these monthly assemblages has been of no mean value may be gleaned from the fact that the papers read have nearly all been reproduced by other journals, and in not a few cases the discussions had in connection with the several subjects brought forward, if reported sufficiently in detail, have not unfrequently received the compliment of being quoted by other periodicals. It is the opinion of the Editor that, providing the members of the College give to these meetings their hearty support, not only may their usefulness be continued in the future, but they may be even made still more attractive and instructive than they have been in the past.

It remains to be stated that after consulting with the Publication Committee the Editor has prepared a general index of the last ten volumes of the JOURNAL, which, having been published, renders, in conjunction with the general index prepared by Mr. H. M. Wilder for the first 42 volumes, all the material available that is contained in the JOURNAL since its first issue in 1825.

The Editor desires yet to direct attention to the improvements in the typography and arrangement of matter published in the JOURNAL, which were adopted with the beginning of the present volume, and in conclusion, begs to thank all who have kindly aided him with contributions and suggestions, and to solicit for the JOURNAL also in the future their hearty support and good will.

Respectfully submitted, JOHN M. MAISCH, *Editor.*

Of the recommendations contained in the Editor's report Prof. Remington spoke warmly in approval.

The report of Mr. Bullock, Treasurer of the Publication Committee, was read and accepted. It presents the usual encouraging exhibit of the financial condition of the JOURNAL.

The Committee on the Sinking Fund reported a sum paid over to the Treasurer of the College with a small balance remaining in their hands.

Charles Bullock, Chairman of the Committee appointed at the last meeting of the College to take action relative to the Act before Congress regarding the adulteration of food and drugs, reported that the committee had met two or three times and discussed the matter fully, but as Congress had adjourned without taking any action upon the bill the labors of the committee were not required further at present. On motion, the report of the committee was accepted, and the committee was continued to report in the future if further action of Congress or of the Legislature of the State of Pennsylvania renders it necessary.

A resolution offered by Mr. Bullock, Chairman of the Finance Committee appointed by the Board of Trustees, authorizing the President, Treasurer and Secretary to issue scrip in the name of the College for the purpose of making the improvements to the College building, was unanimously adopted.

The names of three gentlemen were reported by the Treasurer as being five years in arrears to the College. On motion, their names were ordered to be erased from the roll of members.

The annual election being ordered, the Chair appointed Messrs. Henry Trimble and Gustavus Pile tellers, who reported the following officers, trustees and committees elected, viz.:

President—Dillwyn Parrish.
First Vice-President—Charles Bullock.
Second Vice-President—Robert Shoemaker.
Treasurer—Samuel S. Bunting.
Recording Secretary—William J. Jenks.
Corresponding Secretary—Alfred B. Taylor.
Board of Trustees—for three years—James T. Shinn, T. Morris Perot, Joseph P. Remington.
Publication Committee—John M. Maisch, Henry N. Rittenhouse, Thomas S. Wiegand, James T. Shinn, Charles Bullock.
Sinking Fund Committee—Thomas S. Wiegand, T. Morris Perot, James T. Shinn.
Editor—John M. Maisch.
Librarian—Thomas S. Wiegand.
Curator—Joseph P. Remington.

There being no further business, then, on motion, adjourned,

WILLIAM J. JENKS, *Secretary.*

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, March 15, 1881.

In absence of President Parrish Mr. Alonzo Robbins was called to the chair.

On motion of Professor Maisch, the reading of the minutes of the last meeting were dispensed with.

The report of the Commissioner of Agriculture for 1879 was presented to the Library, for which the thanks of he College were directed to be returned.

Prof. Maisch called attention to some minerals presented to the Cabinet by Dr. F. C. Weber, of Silver Cliff, Nev. The specimens are nickel and cobalt ores, and are also quite rich in silver. On motion, the thanks of the College were directed to be returned to Dr. Weber, and the minerals passed over to Prof. Sadtler for classification.

Mr. Shinn read a paper upon *benzoate of calcium*, a specimen of which salt was presented for inspection. The paper was referred to the Publication Committee.

A sample of oleum rusci was exhibited. It is a tar from birch bark, and is used in the process for tanning Russia leather (see February number, page 55).

A formula for *elixir of salicylic acid* was asked for, and Dr. Wolff furnished the following: Dissolve salicylic acid, ʒi, in alcohol, fʒvi, and add simple elixir (or elixir curacoa), q. s., fʒvi. The dose is a tablespoonful, containing 5 grains of salicylic acid, the taste of which is well masked. The elixir should not be given with water. The additional amount of alcohol in this preparation is not contraindicated, but seems to overcome the tendency of the salicylic acid to act as a cardiac depressor. In variola this elixir has been used with good results.

Mr. Evan T. Ellis exhibited a sample of *gum acroides*, which some par-

ties who have made use of it in the manufacture of varnishes recommend highly. It is largely composed of benzoic acid and on oxidation yields picric acid; it has a benzoin-like, balsamic odor and is of Australian origin.

Prof. J. P. Remington called attention to a formula for preparing *unguentum hydrargyri*, which is of such easy execution that he thought every pharmacist could, by following the directions, make whatever quantity of this preparation he might require.

Take of	Mercury,	50 parts
	Lard,	25
	Suet,	25
	Mercurial ointment,	10
	Comp. tinct. benzoin,	4

Mix the mercury with the compound tincture of benzoin, in a mortar, and add the mercurial ointment, and triturate the mixture until the globules of mercury cease to be visible with a lens of 10 diameters power; then add the suet and lard, previously melted together and partially cooled, and mix all together until smooth. It is unnecessary to use old and rancid mercurial ointment; but the addition of some properly made mercurial ointment, which is entirely free from rancidity, facilitates the extinction of the mercury with the aid of the compound tincture of benzoin, which has a better effect than the simple tincture of benzoin. The small amount of resinous matter, less than 1 per cent., introduced into the ointment, can have no injurious effect.

The following formula for *pilula hydrargyri* is recommended for adoption in the new edition of the U. S. Pharmacopœia:

Take of	Mercury,	16 parts
	Sugar,	15
	Liquorice root, in fine powder,	8
	Honey,	3
	Rose water,	4
	Red rose, in fine powder,	2
	Distilled water,	q. s.

Triturate the liquorice root with the mercury and honey; gradually add the rose water, and continue the trituration until the globules of mercury cease to be visible under a lens magnifying 10 diameters. Then add the sugar and red rose, and rub the whole thoroughly together until a uniform plastic mass results. If the mass becomes too dry during trituration, add a little distilled water, and when the whole is thoroughly mixed expose the mass to the air in a thin layer until it is of proper consistency.

Prof. Maisch stated that he had successfully used a similar formula, which suggested itself through the observation of W. W. Stoddart ("Amer. Jour. Phar.," 1856, p. 162), that mercury is rapidly extinguished with moist powdered liquorice root. Powdered blue mass may be made in the same manner, using, in the place of the honey and rose water, an equal weight of milk-sugar, and finally allowing the water or alcohol employed in trituration to evaporate.

There being no further business, the meeting adjourned.

T. S. WIEGAND, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

THE PHILADELPHIA COUNTY MEDICAL SOIETY AND THE PHILADELPHIA COLLEGE OF PHARMACY.—On page 90 of our February number we have published the report of a committee of the College relating to the proceedings of a conference held with a committee of the Medical Society. The report of the latter, although presented to the Society Jan. 12th last, was only received by the editor about the middle of March, and is here reproduced in full, omitting merely the quotations from the Code of Ethics of the College, which were printed on page 90. In another place will be found some editorial remarks on this report.

"The Committee on Hygiene and Relations of the Profession to the Public," respectfully report as follows:

Dr. Geo. B. H. Swayze, having recently read before this Society a paper in which was discussed the injury done to physicians by certain practices of druggists to whom had been entrusted the dispensing of the prescriptions of medical men, the statements contained in his paper and the opinions elicited in its discussion led to the presentation before the Society of several resolutions designed to remedy the evils complained of. As these resolutions, with the consideration of the whole subject as discussed, were referred to the "Committee on Hygiene and the Relations of the Profession to the Public," they accordingly met for deliberation. At this meeting a report of the recent meetings of the Medico-Legal Society of this city, in which the same subject had been discussed, and also the comments of the "American Journal of Pharmacy," Chicago "Pharmacist," and "Pharmaceutical Journal" of London, November 23, on this subject, were fully presented. From these sources, with the paper of Dr. Swayze, the resolutions of the Society referred to your committee, and the personal evidence of members who were before the committee, it appeared that there were three special grievances laid at the door of the pharmacists:

First—That prescriptions sent to the shop of the druggist were renewed indefinitely, though the intention of the physician was that they should be filled but once.

Second—That druggists invaded the domain of the physician by themselves prescribing for the sick instead of awaiting the prescription of the physician.

Third—That druggists were active agents in disseminating proprietary medicines and nostrums.

It seemed wise to your committee to bring these grievances formally to the notice of the Philadelphia College of Pharmacy as a representative of the interests of pharmacy, and to ask a conference with that organization, with a view to such a mutual understanding between representative physicians and druggists as might dissipate all difficulties. In reply to this request of your committee, the Trustees of the Philadelphia College of Pharmacy appointed a committee to confer with your committee. (A copy of the minutes of this conference, at which Messrs. Remington, Taylor, Shinn and Bullock represented the Philadelphia College of Pharmacy, is appended to this report, and to this is added a letter from Mr. Blair covering the whole subject.) As an outcome of the discussion, the druggists claiming that they were placed in a false position by the silence of the physician, he not specifically stating that his prescription was to be filled but once, the following resolution was adopted by the committee of conference, and its substance is presented for acceptance to the Society:

"*Resolved*, That it is the sense of this 'Committee of Conference,' in order, as far as possible, to prevent the repetition of abuses that have arisen from the unauthorized renewals of prescriptions, that physicians be requested to write the words 'Not to be renewed,' or words or symbols to the same effect, on prescriptions which they do not wish to be renewed without special orders; at the same time instructing patients in regard to the evils likely to arise from such renewals, and informing them of their wishes."

With reference to the prescribing by druggists, Mr. Taylor, on the part of the pharmacists, read the following from the Code of Ethics of the Philadelphia College of Pharmacy. (See page 90; Sec. 2.)

As this injunction of the pharmaceutical ethics, if carried out, would meet the question of prescribing by druggists, it was adopted as expressing the sense of the committee in the premises.

In reference to the sale of proprietary medicines, Mr. Taylor, on the part of the pharmacists, read the following from the Code of Ethics of the College of Pharmacy. (See page 90.)

This also was adopted as the sense of the Committee of Conference, and it is suggested that the Philadelphia County Medical Society approve the expression of the sentiments contained in the extract cited.

The conclusion which your committee has drawn from the above conference is, that the interests of the medical profession are safe in the hands of reputable pharmacists, or such as govern themselves according to the excellent Code of Ethics of the Philadelphia College of Pharmacy. But it seemed equally true to your committee that among the thousands who keep drug stores, and dispense medicine in Philadelphia, there are

many who are guilty of some one or all of the offences charged against druggists; so that your committee offer the following resolutions:

"*Resolved*, That, in the opinion of the Philadelphia County Medical Society, a druggist acts simply as the *agent* of a physician in compounding his prescriptions, and that it is a breach of his proper obligations to the physician to renew, without his direction, or furnish copies of, any formula prescribed.

Resolved, That the members of this Society will note which druggists commit such breaches of obligations, and dissuade their patients from taking prescriptions to them to be compounded.

Resolved, That the members of this Society will endeavor to have their prescriptions compounded by apothecaries who do not exhibit signs or circulars, or otherwise encourage the use by the public, of patented or proprietary medicines."

Inasmuch as it appeared that many physicians themselves prescribed patented and proprietary articles, it was further

"*Resolved*, That it be recommended to this Society to reaffirm the sentiments expressed in Section 3, Article I, of the By-laws of the Philadelphia County Medical Society, viz., 'That any physician who shall enter into an agreement with an apothecary to receive pecuniary compensation or patronage for sending prescriptions to said apothecary, or who prescribes a remedy without knowing its composition, or who shall hereafter give a certificate in favor of a patent remedy or instrument, shall be disqualified from becoming or remaining a member of this Society.'"

"*Resolved*, That this Society transmit to the Trustees of the Philadelphia College of Pharmacy a copy of this By-law; also their approval of the sentiments contained in the articles of the Pharmaceutical Code of Ethics, above quoted."

Finally, your committee offer the following resolutions for the acceptance of the Society:

"*Resolved*, That the report of the committee be printed in full in the 'Transactions of the Philadelphia County Medical Society,' with the action of the Society, and that their publication be asked for also in the 'American Journal of Pharmacy' and in the 'Druggists' Circular.'

"*Resolved*, That the committee be discharged from the further consideration of the subject."

It was also

"*Resolved*, That the Trustees of the Philadelphia College of Pharmacy be requested to furnish each of their graduates with a copy of the Pharmaceutical Code of Ethics."

It was also

"*Resolved*, As the sense of this Society, that there is nothing in Ethics to forbid a physician dispensing his own medicines."

By order of the committee,

RICHARD A. CLEEMANN,
Chairman of the Committee on Hygiene, etc.

PHILADELPHIA COLLEGE OF PHARMACY.—The students of the *Junior Class* were examined on the afternoon and evening of February 15th. The following specimens were set out for examination and recognition:

Cetraria,	Aqua menthæ viridis,	Aqua chlorinii,
Lavandula,	Syrupus tolutanus,	Carbo animalis,
Arnica,	Infus. gentianæ comp.,	Acidum nitricum,
	Tinct. cinchonæ comp.	

The questions to be answered in writing were as follows:

MATERIA MEDICA AND BOTANY.

1. Define *fibro-vascular tissue*, and state the parts of dicotyledonous plants in which it is contained.
2. What is the difference between a *legume* and a *follicle?* Give an example of each,
3. Define the terms *hypgynous* and *epigynous* as applied to petals and stamens, and for each position name an officinal flower.
4. Give the characters of the natural order of *Compositæ*.
5. Name some *drugs* derived from the natural order of *Solanaceæ*, and state to what class of principles they owe their poisonous properties.

PHARMACY.

1. What is a Cubic Centimetre? How many are contained in a fluid-ounce? What is the usual abbreviation? How many grains are there in a Cubic Centimetre of Water at 4°C.?
2. What shape should vessels have that are to be used for evaporating

liquids? What is the law which governs the rapidity of evaporation of liquids above and below ebullition?

3. Define the following pharmaceutical terms: Infusion; Decoction; Extract; Syrup; Wine.

4. How are medicated Waters usually made? What improvements have been recently suggested in the officinal process, and what are the advantages in the proposed improvements?

5. How is Fowler's Solution of Arsenic made? What is its officinal name in full? What is the usual dose?

CHEMISTRY.

1. What is meant by *Specific Gravity?* Describe the process for taking the specific gravity of a solid; of a liquid.

2. What is an Electro-magnet? Of what must the core of an Electro-magnet consist?

3. What experimental proof can you give that the formula of Water is H_2O and not HO?

4. Describe the commercial manufacture of Sulphuric Acid.

5. Write the reaction for the preparation of Carbonic Acid gas as carried out with marble dust and Sulphuric Acid.

QUESTIONS BY THE EXAMINING COMMITTEE.

1. Describe or illustrate by a diagram any two of the following forms of inflorescence: Raceme; Umbel; Corymb; Spike; Spadix. Give the botanical name and natural order of three plants which yield officinal flowers.

2. *Crystallization.* Describe three distinct methods for obtaining Crystals. How are granular salts prepared? and what precautions are necessary to secure the best results?

3. How many grains of each of the following officinal substances will a 1,000-grain specific gravity bottle hold?—Sulphuric Acid; Nitric Acid; Stronger Water of Ammonia. What other instrument is in common use for taking the specific gravity of liquids? Describe it.

4. What are the physical properties of Chlorine? Give the process for obtaining it. What are its direct compounds with other elements called? Describe the process for making Hydrochloric Acid. State its physical properties and specific gravity.

5. What two Nitrates are used in making Nitric Acid? From which can the largest yield of acid be obtained, and why?

About three-fourths of the candidates passed the examination in all the branches; the remainder will be re-examined in those branches in which they have been unsuccessful on Thursday afternoon, September 29th, at 3 o'clock, at which time, also, students from other colleges who have not passed the junior examination may be examined previous to entering the senior class. Applications for this supplementary examination should reach the Actuary of the College, Mr. Thos. S. Wiegand, not later than September 15th.

The examination of the *senior students* commenced on Saturday, February 26th, and closed Thursday, March 3d, with practical manipulations. The questions on each branch were as follows:

QUESTIONS IN MATERIA MEDICA.

A. Give the botanical name, natural order, habitat and officinal part of *Dandelion.* Mention its structural characteristics and their difference from those of Chicory. In what respect do the constituents of Dandelion vary in the different seasons?

B. Give the botanical name, natural order, habitat and officinal part of *Male Fern.* Describe the officinal article briefly, giving, also, its structural

characteristics; and state how the same part of an American species may be distinguished from the former. What are the medicinal properties and dose of both?

C. Virginia Snake Root. Describe its physical and structural character; name the two principal commercial varieties and state in what respects they differ, from which plants they are respectively obtained, and the habitat of these plants.

D. What is the name and natural order of the plant yielding *Cottonroot Bark?* Describe the physical and structural characters of the bark. What is the color of the tincture made with fresh, and with dry bark? Give medicinal properties and dose of the drug.

E. Name the officinal *Leaves and Leaflets* having an entire margin, and of each give the name, natural order, habitat of plant, and distinguishing characters.

F. Juniper Berries. From what plant, natural order and country are they obtained? Describe, briefly, their development, their structural characters and their important principles and medicinal properties.

G. Describe *Caraway* as to the plant, natural order, native country and part of plant officinal; describe its physical and structural characters and its important medicinal principles.

H. Give the name, natural order and habitat of the plant yielding the *Bean of St. Ignatius;* what part of the plant is it? Describe its physical and structural characteristics, and give the approximate percentage of its chief medicinal principles.

I. What is *Lycopodium?* Give the name, natural order and habitat of the plant yielding it. How is it collected? Describe its physical and structural characters; name its constituents and properties.

K. From what plant, natural order, country, and in what manner, is *Mastic* obtained? Describe it, name its constituents, and state how it may be readily distinguished from another drug resembling it.

QUESTIONS IN PHARMACY.

1. Give the unabbreviated officinal names, ingredients and an outline of the manipulation for the following preparations; state, briefly, in what respects each one differs from the preparation often sold or dispensed under its name: *a*, Hoffman's Anodyne, Citrate of Iron and Quinia, Neutral Mixture; *b*, Dover's Powder, Extract of Rhatany, Belladonna Plaster.

2. Give the unabbreviated officinal names of the following preparations, the quantities of the ingredients used in the officinal formulas, and their equivalents in metric *weights*, showing how you obtained the results: Opium Pills, Lead Water, Diluted Acetic Acid, Seidlitz Powders, Veratria Ointment.

3. Give the unabbreviated officinal names and the ingredients of the following preparations, and state why the preparations, although apparently made strictly according to the Pharmacopœia directions, are often seen deficient in transparency. Can precipitation or turbidity be prevented in each case when the officinal processes are strictly followed? What influence has change in temperature or age upon each preparation in affecting their transparency?—Soap Liniment, Tincture of Rhubarb, Syrup of Seneka, Oleoresin of Cubeb, Syrup of Squill.

4. Give the unabbreviated officinal names, the common names, ingredients, proportion of opium, and doses of the liquid preparations of the Pharmacopœia containing Opium.

5. Give an outline of the process for making Wine? What are the officinal names of the Wines in the primary list of the Pharmacopœia? What is the principal objection to the use of Wine as a Menstruum. Give a process for determining the fitness of Wine to be used for making officinal medicated Wines more permanent and uniform than they now are.

6. Of the following six liquids, which *three* do you regard as the best solvents for Sulphate of Quinia?— *Water, Alcohol, Ether, Chloroform, Diluted*

Sulphuric Acid, Solution of Ammonia. Place the solvents in the order of their power, the best solvent first. Give the Phamacopœia test for identity and purity of Sulphate of Quinia.

7. Describe, briefly, three methods for obtaining Volatile Oils. Into how many classes are Volatile Oils divided according to their chemical composition? Name one belonging to each class. What are the proximate constituents of Volatile Oils? How may one proximate constituent be separated from the other? When Alcohol is used to adulterate Volatile Oils how may it be detected?

8. How is Sweet Spirit of Nitre prepared by the officinal process? What improvement has been suggested to make the finished product more definite and uniform? What change takes place in the preparation upon keeping? What is its Specific Gravity? What are the usual adulterations? How may they be detected!

9. What are the terms used to designate the parts of a Physician's Prescription (containing more than one ingredient), which has been correctly written theoretically; illustrate by an example containing any three ingredients (using proper abbreviations if you choose), and expressing quantities in apothecaries weight or measure. Take the same ingredients and quantities and write out a corresponding metric prescription.

10. What three physical qualities must a good pill mass possess? Why is each quality necessary? What is the use of an excipient? Name four different kinds of excipients used in U. S. P. formulas for pills—give an officinal formula with ingredients in which each excipient that you have named is used, and state the supposed reasons for selecting the excipient in each case.

QUESTIONS IN CHEMISTRY.

A. Is there any difference in the officinal method for preparing *Potassii Iodidum*, and that used for *Potassii Bromidum?* State what are the materials used in each case. Write the chemical reactions involved in each process.

B. What is the officinal process for preparing *Potassii Bicarbonas?* Upon what physical principle does the success of this process depend? Is the process for preparing *Sodii Bicarbonas Venalis* the same? If not, what is the difference? In what condition is the resulting Sodium Salt gotten?

C. Write the reaction for the Slaking of Lime; also that involved in the use of Lime-water as a test for Carbonic Acid Gas; that required for the liberation of Carbonic Acid Gas from marble; that for its preparation from *Sodii Bicarbonas;* that involved in the preparation of *Calx Chlorinata.*

D. Write the chemical formula of *Alumen;* of *Ferri et Ammonii Sulphas;* of *Aluminii et Potassii Sulphas;* of *Alumen Exsiccatum.*

E. Write the formula and give the correct chemical name of *Hydrargyri Chloridum Mite;* of *Hydrargyri Chloridum Corrosivum;* of *Hydrargyri Iodidum Viride; Hydrargyri Iodidum Rubrum;* of *Hydrargyrum Ammoniatum.*

F. Give the chemical formula of *Plumbi Acetas;* of the Salt present in *Liquor Plumbi Sub-acetatis,* and describe the preparation of this latter from the first mentioned compound.

G. What is an *Ether;* What is the distinction between a simple and a compound Ether? Give the molecular formula of common ether. How is it made—from what materials and with what precautions? Give the chemical formula of Nitrous Ether. What is the composition of the officinal preparation?

H. Give the several groups of *saccharine* compounds. What are the differences in their chemical formulas? Mention an officinal compound containing Glucose. What is Fermentation? Illustrate by formula the change the sugar undergoes in Fermentation. What are the distinguishing characters and tests for *Amylum?*

I. What is the composition of a *Natural Fat?* Illustrate by the chemical formula of *Oleine.* How is this formula affected by the treatment with

Alkali? What are the products of such treatment? Is there any other way of decomposing a fat? If so, mention it.

K. Give the formula of *Carbolic Acid.* To what class of Organic Compounds does it belong? Whence is it obtained? What are its physical and chemical properties? What are Sulpho-carbolates? Give an example.

QUESTIONS BY THE EXAMINING COMMITTEE.

A. Give the botanical name, natural order, and habitat of the plant which yields *Nux Vomica.* Describe the physical characteristics of the officinal drug. Name two of its chief constituents, and give their distinguishing tests. Name an acid which also exists in the drug. Name two officinal preparations of the drug, and give the dose of each.

B. What is the officinal name of *Calomel?* Give the mode of its preparation. Explain the reaction which takes place. What is its probable contamination? Give a test of its purity. Name two officinal preparations into which it enters. Give the officinal name and mode of preparation of *corrosive sublimate.* Explain the reaction which takes place. Give a test of its purity. What is its dose?

C. Give the *officinal name* and *active principle* of the following drugs; also the *botanical name, natural order,* and *habitat* of the plants which produce them, viz.: *Belladonna, Seneka, Cevadilla, Wormseed, Levant Wormseed.*

D. Give the botanical name, natural order, and habitat of the plant which yields the officinal *Aconite-root.* Describe briefly the manner in which the root is developed, and state its physical and structural characteristics. Name two alkaloids and an acid which it contains. From what other source may this acid be obtained? Name the officinal preparations into which the root enters.

E. What is the officinal name of *Cream of Tartar?* From what source is it derived? Describe the mode of its purification. What are its chemical constituents? What impurity is generally present in the commercial article? How would you convert *Cream of Tartar* into *Soluble Tartar?* How is *Tartaric Acid* obtained?

F. Give the *officinal name, symbol* and a test of the following metals, viz: *Mercury, Iron, Arsenic, Zinc, Bismuth.* Name an officinal Salt of each, and write its symbolic formula.

G. Give both of the officinal processes for the manufacture of *Liquor Potassæ.* State what reaction takes place in the process first directed. What are its physical characteristics, and specific gravity? What precautions are necessary to preserve it in a pure state? What per cent. of Hydrate of Potassium does it contain?

H. What is the chief commercial source of *Alcohol* in the *United States?* Give a brief outline of the process of its manufacture. Give its chemical formula and molecular weight? Give the *officinal name* and *specific gravity* of each of the three officinal strengths of Alcohol. State the percentage by weight and by volume of absolute alcohol contained in each. Give a test for water in absolute alcohol. How may *Acetic Acid* be obtained from alcohol? Give the chemical formula of two of the compounds of ethyl. What other alcohol is frequently present as an impurity in commercial alcohol? Of what officinal acid is this impurity a source?

I. How would you prepare this prescription? And when prepared would it be in a suitable condition to dispense?

1.

℞ Quiniæ Sulphatis, . gr xx
Tincturæ Ferri Chloridi,
Acidi Phosphorici Diluti, aa f℥iv
Mucilaginis Acaciæ, . f℥ii
Fiat mistura,
Signa. A teaspoonful to be given three times a day.

2.

Would you dispense the following:
℞ Hydrargyri Iodidi Rubri, gr xx
Extracti Gentianæ, . . gr x
Misce et fiat massa in pilulas decem dividenda.
Signa. One to be taken three times a day.

K.

State how you would prepare prescriptions number 3 and 4, and whether you would dispense them when prepared. And why?

3.

℞ Quiniæ Sulphatis, . . gr x
Acidi Sulphurici, . f ʒi
Aquæ, ... f ʒvii
Fiat mistura,

Signa. A tablespoonful to be taken morning and evening.

4.

℞ Acidi Arseniosi, . . . gr x
Hydrargyri Chloridi Corrosivi, ... gr iss
Strychniæ, ... gr i
Morphiæ Sulphatis, . . gr ii
Ferri Redacti, . . gr lxiv
Misce, et fiat massa in pilulas xxxii dividenda.

Signa. One pill to be taken three times a day.

The following is a list of the specimens in each department placed upon the table for recognition:

Materia Medica.	Pharmacy.	Chemistry.	Examining Committee.
Senega,	Confectio Sennæ,	Potassii bromidum,	Prunus Virginiana,
Leptandra,	Mist. Ammoniaci,	Sodii boras,	Terebinthina,
Asarum,	Infus. Digitalis,	Liquor calcis,	Syrupus Scillæ,
Canella,	Acetum Scillæ,	Magnesii carbonas,	Extr. Taraxaci fluid.,
Cinchona rubra,	Tinct. Sanguinariæ,	Alumen,	Aqua Amygdalæ amaræ,
Sabina,	Syrupus Rhei,	Cupri subacetas,	Spir. Ammon. aromat.
Lavandula,	Extr. Conii fruct. fluid.,	Plumbi oxidum,	Tinctura Iodinii,
Cubeba,	Linimentum Calcis,	Acidum oxalicum,	Potassii nitras,
Sinapis nigra,	Alcohol amylicum,	Acidum citricum,	Magnesii sulphas,
Kino.	Potassii acetas.	Chloroformum.	Acid. oxalicum.

At the practical examination each candidate was required to spread a Burgundy pitch plaster 6¾ by 4½ and to prepare 4 ounces of mistura ferri composita, 12 pilulæ ferri comp. and 1 ounce unguentum hydrargyri nitratis.

The following 140 gentlemen passed the examinations and were recommended to the Board of Trustees for the degree of Graduate in Pharmacy:

Charles Franklin Adams, New Jersey, *Pharmaceutic Ethics.*
Ernest Herbert Baker, Pennsylvania, *Glucose.*
Jacob Baur, Indiana, *Hydrangea Arborescens.*
Charles Edward Bellows, New Jersey, *Poisons and Apothecaries' Mistakes.*
Wilber Merritt Benton, Illinois, *Manufacture of Alcohol.*
Charles Henry Bernhard, Illinois, *Celastrus Scandens.*
Louis Napoleon Berubé, Pennsylvania, *Turnera Aphrodisiaca.*
Samuel Everett Betts, Delaware, *Pepsin.*
John Beuter, West Virginia, *Adiantum Pedatum.*
William Jasper Bowman, California, *Aspidium Rigidum.*
Philip Fine Howell Brakely, New Jersey, *Animal Absorption.*
Frank Wigton Brown, Pennsylvania, *Salicylic Acid.*
Charles Alfred Bye, Pennsylvania, *Unguentum Hydrargyri Nitratis.*
James Edward Cahill, New Jersey, *Aletris.*
Samuel Campbell, Jr., Pennsylvania, *Exhaustion of Drugs.*
Nathaniel Alexander Cashman, Pennsylvania, *Filtering Paper.*
Charles Frederick Chapman, Ohio, *Syrup of Tolu.*
Alton Clabaugh, Pennsylvania, *Asclepias Tuberosa.*
Charles Wesley Clymer, Pennsylvania, *Cacao.*
William Edmund Cook, New Jersey, *Syrups by Cold Process.*
Samuel Walter Courtney, Pennsylvania, *Fermentation.*
Walter Cramer, Wisconsin, *Phytolaccæ Baccæ.*
David Winfield Cressler, Pennsylvania, *Iris Versicolor.*
Frederick Wallace Culler, Ohio, *Requirements of Pharmacy.*
William Edw. Danner, Pennsylvania, *Standard Solution of Dialysed Iron.*
Frank Clifford Davis, Pennsylvania, *Duties of a Pharmacist.*
John Walheater Davis, Penn., *Arrangement and Dispensing of Poisons.*
William Lowther Demarree, Pennsylvania, *Castoreum.*
Benjamin Harper Diehl, Pennsylvania, *Glycyrrhiza.*
Emil August Dorner, Pennsylvania, *Resins and Oleoresins.*
Serrill Douglass, Pennsylvania, *Heat and its Application.*
Frank Hertzler Eberly, Pennsylvania, *Lycopodium.*

George Hilliard English, New York, *Liq. Pepsin Glyceritum.*
John C. Fahey, Pennsylvania, *Liq. Magnesii Citratis.*
William Henry Faunce, Pennsylvania, *Phosphoric Acid.*
Louis Genois, Louisiana, *Dialyzed Mannit.*
Michael Gerstacker, Ohio, *Products of Coal Gas.*
George Goebel, Jr., Pennsylvania, *False Senega.*
George Albert Gorgas, Pennsylvania, *Emulsions of Cod Liver Oil.*
Thomas Richard Gossling, England, *Caryophyllus Aromaticus.*
Emil George Herman Graff, Germany, *Emulsions.*
John Franklin Gray, Pennsylvania, *Does Pharmacy Pay?*
Robert Thomas Grime, Pennsylvania, *Aspidium Acrostichoides.*
William Griscom, Jr., New Jersey, *Hydrobromic Ether.*
Charles Henry Gubbins, Penn., *Ointments of the New Pharmacopœia.*
Herman Thomas Haessig, Kentucky, *Emulsions.*
John Henry Hahn, Pennsylvania, *Ustilago Maidis.*
Francis Marion Halloran, Kentucky, *Coal Tar Products.*
Benjamin Baird Hamlin, Jr., Pennsylvania, *Color Reactions.*
Harry Winston Harper, Missouri, *Rhus Aromatica.*
Joseph Hart, Maryland, *Processes of New Pharmacopœia.*
Bernhard August Hertsch, Pennsylvania, *Herba Violæ Tricoloris.*
Walter Lippincott Hinchman, New Jersey, *Asclepias Syriaca.*
Francis Hodgson, New York, *Chemical Progress.*
Willis Andrew Balch Hoke, West Virginia, *Convenience of Powdered Extracts.*
Jedediah Griffifth Howard, Pennsylvania, *Theses.*
Frank Ames Hoyt, Connecticut, *Cornus Sericea.*
Charles Bradford Hunterson, New Jersey, *Preparation of Tinctures.*
Theodore Edward Ihrig, Pennsylvania, *Percolation.*
John Wesley Jacoby, Pennsylvania, *Specific Gravity.*
William Earl Jenks, Pennsylvania, *Iris Versicolor.*
Chester Johnson, New York, *Rubus Villosus.*
Charles Linnæus Joy, New York, *Benzin Process for Oils and Oleoresins.*
Irving Washington Kelly, New Jersey, *Amorphous Phosphorus.*
John Henry Kerr, Pennsylvania, *Rheum.*
Charles Pitman Kirby, New Jersey, *Commercial Strength of Tinct. Ferri Chlor.*
George Harry Knowlton, New Hampshire, *Acid. Phosphoric. Dilut.*
John Leedom Kooker, Pennsylvania, *Benzoin.*
Charles Henry Krauter, New Jersey, *Mist. Glycyrrhizæ Comp.*
Albert Henry Lafean, Pennsylvania, *Solubilities of Alkaloids in Alcohol.*
Peter William Lascheid, Pennsylvania, *Glucose.*
Edward Jacob Lawall, Pennsylvania, *Syrupus Ipecacuanhæ.*
Charles Leedom, Pennsylvania, *Adulterations.*
Washington Emil Linden, Ohio, *Value of Commercial Cinchona.*
John Allen Lins, Pennsylvania, *Products of Distillation of Wood.*
John Francis Loehle, Pennsylvania, *Solubility of Salts.*
John Henry Love, Pennsylvania, *Manufacturing and Retail Business.*
Frank Luerssen, Pennsylvania, *Muriate of Ammonia Contrasted.*
William Charles McClintock, Pennsylvania, *Thymus Vulgaris.*
Edward Adolphus Manheimer, Indiana, *Difference of Apocynum Androsæmifolium and Cannabinum.*
Constanz Manz, Iowa, *Ipomœa Pandurata.*
Rush Porter Marshall, Maryland, *Glycerina.*
Joseph Ingles Matthias, Pennsylvania, *Caffea.*
Charles Henry May, Oeio, *Fld. Ext. and Syr. Ipecacuanhæ.*
William Christian Mayer, Pennsylvania, *Ung. Zinci Carb.*
Charles William Mengle, Pennsylvania, *Preparation of Decoctions and Infusions from Fld. Exts.*
John Benjamin Metzger, Pennsylvania, *Fruit of Sambucus Canadensis.*
Frank Benjamin Meyer, Indiana, *Parthenium Integrifolium.*

Samuel Warren Miller, Pennsylvania, *Syrup of Lactucarium.*
Benjamin Franklin Moise, Jr., South Carolina, *Extract of Butternut.*
Frank E. Morgan, New Hampshire, *Observations in Perfumery.*
James Hamilton Morgan, Delaware, *Beet Sugar.*
Lemuel Iorwerth Morris, Kansas, *Oleoresin of Silphium Laciniatum.*
Harry S. Mount, New Jersey, *Helleborus Niger.*
Henry Melchior Muhlenberg, Pennsylvania, *Sulphur.*
Edwin S. Muir, Maryland, *Colchicia.*
Charles William Myers, Pennsylvania, *Linaria Vulgaris.*
Thomas Shields Nairn, District of Columbia, *Phytolaccæ Baccæ.*
Asher Christian Nagle, Pennsylvania, *Piscidia Erythrina.*
Gustav Adolph Otgen, South Carolina, *Pyrethrum Roseum.*
William Frederick Pape, Ohio, *Phytolaccæ Baccæ.*
Jesse Walton Pechin, Pennsylvania, *Coto Bark.*
Mason George Perry, Pennsylvania, *In Behalf of More Palatable Medicines.*
David Reynolds Reed, Delaware, *Pharmaceutical Reform.*
Emil G. Rehfuss, Pennsylvania, *Suppositories.*
George Reimann, New York, *Acacia Savakin.*
Charles A. Rinek, Pennsylvania, *Cephaelis Ipecacuanhæ.*
Frank Pierce Rogers, New Jersey, *Duties of a Pharmacist.*
George Weidler Roland, Pennsylvania, *Chemistry in Pharmacy.*
Charles Edward Roove, North Carolina, *Abuse of Opium.*
George Adolphus Schroeder, Ohio, *Rhizoma Zingiberis Officinalis.*
Joseph Harry Scott, Pennsylvania, *Membrana Callosi.*
Charles Tripler Shewell, Pennsylvania, *Medicated Waters.*
Samuel Howard Shingle, Pennsylvania, *Fld. Ext. Pruni Virginianæ.*
Frank Leroy Slocum, Wisconsin, *Sanguinaria Canadensis.*
Edward Newton Smith, Connecticut, *Examination of Ericaceous Plants.*
Edward W. Smith, Pennsylvania, *Tinct. Opii, Morphia Strength.*
William Clay Smith, Iowa, *Specific Gravity and Increase of Volume.*
William Ellwood Speakman, New Jersey. *Cinnamomum Zeylanicum.*
John George Spengler, Ohio, *Distillation Products of Wood.*
Beach Jones Stathem, New Jersey, *Pharmacy.*
Everard Potter Stephens, Delaware, *Sanguinaria Canadensis.*
Henry Herman Strater, Ohio, *The Prescription.*
James Wills Swope, Pennsylvania, *Emplastrum Plumbi.*
William Tag, Pennsylvania, *Blue in Granulated Sugar.*
John Dalzell Taylor, New Jersey, *Glycyrrhiza.*
Henry Thornton, Pennsylvania, *Suppositories.*
Charles Godfrey Traub, Indiana, *Bark of Sambucus Canadensis.*
Josiah S. Tyree, Virginia, *Proventriculus Gallinaceus.*
Edward Virden, Delaware, *Capsicum Annuum.*
John Edward Wallis, Pennsylvania, *Anacyclus Pyrethrum.*
Henry Lee Warne, Wisconsin, *Etherial Strength of Spiritus Aetheris Nitrosi.*
William Richard Warner, Jr., Pennsylvania, *Pil. Ferri Iodidi.*
Frank Craven Weaver, Pennsylvania, *Cascara Sagrada.*
Henry Bacon Weaver, New Jersey, *Pharmaceutic Art.*
Christian Weiss, Pennsylvania, *Ginger and its Preparations.*
Stephen A. Douglass Willever, New Jersey, *Herba Tussilago.*
Will Clark Williams, New Jersey, *Organic Alkaloids.*
James Matthew Wilson, Pennsylvania, *Eucalyptus Globulus.*
Henry Zaun, Pennsylvania, *Alcohol.*

On the evening of March 15, in compliance with an invitation extended by the faculty, the graduates, the members of the Board of Trustees and several guests assembled in the Museum of the College; the reunion was a very pleasant one, and after supper toasts were given and speeches made until, at a late hour, the company separated, singing "Auld lang syne."

The commencement was held at the Academy of Music, on the evening of March 16th, in the presence of a large and attentive audience. The President of the College, Dillwyn Parrish, conferred the degree of Ph.G., after which the Procter prize gold medal was awarded to Louis Genois, of New Orleans, and Wm. E. Jenks, of Philadelphia, who had attained the grade *very satisfactory* in each of the six branches of examination. Honorable mention was made of the following gentlemen, whose general average was *very satisfactory:* G. A. Otgen, E. W. Smith, William C. Smith, Jacob Baur, F. W. Culler, E. H. Baker, C. H. Bernhard, W. E. Linden, H. W. Harper, J. G. Spengler, W. J. Bowman, H. B. Weaver, E. J. Lawall, F. H. Eberly, George H. Knowlton, William C. Danner, Samuel Campbell, Jr., C. H. Krauter, F. E. Morgan and H. L. Warne.

The following prizes for theses were awarded: For the best thesis without restriction as to the subject, offered by Henry C. Lea, Son & Co., $100, to Harry W. Harper, of Missouri; for the best microscopical research on the structure of indigenous drugs, with or without chemical analysis, offered by the chair of materia medica and botany, a Zentmayer microscope, to Frank L. Slocum, of Wisconsin. Among the many creditable theses presented by the graduating class those written by the following gentlemen were deemed especially worthy of honorable mention: *Geo. Goebel, Jr., *W. L. Hinchman, *Chester Johnson, I. W. Kelly, A. H. Lafean, *E. A. Manheimer, *L. I. Morris, W. C. Smith and H. L. Warne. Those marked * are microscopical investigations.

The valedictory address, abounding with sound advice, was delivered by Professor Remington. At the close of the address, which was repeatedly greeted with applause, the graduating class presented a handsome pair of counter scales to Prof. Remington, and a silver tea set to the Actuary of the College, Thos. S. Wiegand.

The exercises were interspersed with music by the Germania orchestra, and closed with the distribution of bouquets, books and other presents, sent upon the stage by the friends of the graduates.

THE ALUMNI ASSOCIATION *of the Philadelphia College of Pharmacy* tendered a reception to the graduates in one of the lecture rooms of the College on the evening of March 14th. The President, Mr. Hugh Campbell, presided. After distributing the certificates of membership to the new members the Alumni gold medal was presented to Louis Genois, and certificates to the following graduates who had passed the best "very satisfactory" examination in the respective branches, namely: Materia medica, to Wm. E. Jenks; pharmacy, to Wm. C. Smith; chemistry, to G. A. Otgen; general pharmacy, to F. H. Eberly; pharmaceutical manipulations, to S. W. Miller. The Alumni certificate for the best junior examination was awarded to Homer W. McCoy, of Ohio. The annual address was delivered by George W. Kennedy, of Pottsville, Pa., and the valedictory address on behalf of the graduates by Louis Genois, of Louisiana.

At the annual meeting of the Alumni the following officers were elected: President, Henry Trimble; Vice-Presidents, L. E. Sayre and Emmor H. Lee; Recording Secretary, Wm. E. Krewson; Corresponding Secretary,

C. C. Meyer; Treasurer, E. C. Jones; Members of the Executive Board, C. L. Mitchell and D. W. Ross; Orator at the next annual meeting, F. B. Power.

NEW YORK COLLEGE OF PHARMACY.—The following candidates have passed the examinations and received the degree of Graduate in Pharmacy:

Edward L. E. Aymé, New York, *Tobacco.*
William Bodebender, Ohio, *Tincture of Opium.*
Charles A. Bodenstab, New York, *Atropa Belladonna.*
Henry U. Brœunlich, Iowa, *Acacia.*
Charles G. Bruckmann, New York, *Benzoe, Benzoic Acid, Derivative.*
Frederick W. Bruckmann, New York, *Sanguinaria.*
Louis Brunswig, Louisianna, *Argenti Nitras.*
Benjamin Cahn, Virginia, *Soap Bark as Emulsifying Agent.*
Philip K. Clark, Vermont, *Sodium Chloride.*
Isaac Cohn, Poland, *Camphor.*
Luis E. Cuevas, Portorico, W. I., *Mercury.*
William DeLano, New York, *Percolation.*
William H. Dewender, New York, *Unguent. Hydrarg. Nitratis.*
William R. DuMond, New York, *Physostigma.*
Arthur Fischer, Ohio, *Iodine.*
Eugene L. Fridenberg, New York, *Disinfectants.*
Harry H. Funnell, New York, *Synthetical Chemistry.*
George J. Geiger, New Jersey, *Derivatives of Cellulose.*
Frank Gundlach, New York, *Bitartrate of Potassium.*
Henry Hamerslag, Germany, *Arsenic.*
Thomas A. Hand, New York, *Belladonna and Alkaloids.*
Rudolph Hanke, New York, *Coffee.*
Louis E. Hanmore, New York, *Calomel.*
Charles F. Heebner, Massachusetts, *Dialysed Tinctures.*
Louis Hess, New York, *Honey.*
Frederick Hohenthal, New York, *Benzoate of Soda.*
Emil T. Fr. Holthusen, Germany, *Iodine.*
George B. Hooker, New Jersey, *Pepsina Porci.*
Ellison W. Hurd, New York, *Emulsion of Cod-Liver Oil.*
Thomas J. Jones, Bermuda, *Percolation.*
William Th. Jones, Kentucky, *Belladonna and Alkaloid.*
Franz Kahlenberg, Germany, *Digitalis.*
Joshua O. King, Jr., Georgia, *Fluid Extracts.*
Hugh A. Klamer, Austria, *Water and Relation to Hygiene.*
Carl Fr. W. Kordenat, Germany, *Digestion and its Organs.*
Johannes M. A. Laue, Germany, *Concealing Bitter Taste.*
Andrew Leuschner, New York, *Benzoic Acid and Benzoates.*
E. H. Oscar Linke, Germany, *Water.*
Charles F. Lord, New York, *Ammonium and Preparations.*
Walter S. McCann, Illinois, *Water.*
Wellington E. McEwen, New York, *Guarana.*
Arthur F. May, Ohio, *Iodide of Potassium.*
Charles F. Mayer, Indiana, *Chrysophanic Acid.*
Hugo L. M. Metz, New York, *Water.*
Edward Miller, New York, *Silver and Officinal Preparations.*
Elijah J. Molloy, England, *Chemistry.*
Lucius M. Monroe, Jr., Connecticut, *Volatile Oils.*
Henry E. Nicoud, Pennsylvania, *Toxicology.*
John Pfeiffer, New Jersey, *Scammony.*
Frank L. Powell, Rhode Island, *Duboisia Myoporoides.*
Emil Rauth, New York, *Opium and its Effects.*
Gustavus Roeber, Wisconsin, *Arrangement of Atoms.*
Charles Roenbeck, New York, *Iron and its Scale Salts.*

Joseph H. Rosell, New Jersey, *Balsams.*
Fritz Rosenkranz, Germany, *Iodine.*
Frank M. Roth, Ohio, *Digestion.*
Henry C. Roth, New York, *Volatile Oils.*
Frederick E. Ruppel, New York, *Sodii Benzoas.*
George N. Sahner, Germany, *Aconite and Preparations.*
Réné R. Snowden, South Carolina, *Pharm. Products of Orange.*
Daniel H. Starr, New York, *Sponge.*
Rudolph Theiss, New York, *Physostigma.*
Aloys J. H. Van de Bergh, Germany, *Hypophosphite of Lime.*
Egon C. B. Wernicke, Austria, *Digitalin.*
Herman Wortmann, New Jersey, *Cyanogen and Hydrocyanic Acid.*
Carl Wurm, Germany, *Urine and Constituents.*

The Commencement was held at Chickering Hall Tuesday, March 22d. After a brief address of welcome by the President, Ewen McIntyre, the same officer conferred the degree of Ph.G. on the gentlemen named above, and awarded the certificate of proficiency in Chemistry and Materia Medica to Mr. Elijah J. Molloy. The Alumni prizes, consisting of a gold, a silver and a bronze medal, were awarded by Mr. T. F. Main to A. F. May, F. Hohenthal and Wm. Bodenbender. Addresses were also made by Col. Douglas Campbell, and, on behalf of the graduating class, by E. L. Fridenberg.

ALUMNI ASSOCIATION NEW YORK COLLEGE OF PHARMACY.—At the annual meeting, held March 21, the following officers were elected: President, Thos. F. Main; Treasurer, S. H. Ambler; Secretary, F. F. Knapp; Registrar, L. M. Royce; Executive Board—P. W. Bedford, J. Aelden, E. Montanus, Jr. Delegates to the American Pharmaceutical Association and various committees were appointed, and after the meeting a complimentary dinner was given to the graduating class.

MARYLAND COLLEGE OF PHARMACY.—The following-named students, having successfully passed the several examinations, and in all other respects complied with the necessary requisites for graduation, were by the Board of Trustees declared entitled to the degree of Graduate in Pharmacy:

Geo. A. Strauss, R. P. C. Scheidt, Wm. Caspari, Jr., J. Webb Foster, C. H. Meyer, Robt. Suck, J. F. Anderson, W. B. Dickinson, E. H. Kabernagle, Robt. F. Petzold, Clarence F. Moore, Victor T. Walter, Louis Weibkeng, B. Nadel Coe, F. H. Copper, Jas. T. Hepbron, Moses Kahn, John L. Lauer, Edw. S. Maguire, Walter N. Smith.

The annual commencement was held in the Academy of Music on the evening of March 30. Mr. Geo. A. Strauss was awarded the 1st College prize and also the prize for proficiency in Analytical Chemistry. The 2d prize was awarded to R. P. C. Scheidt, and the 3d prize to J. Webb Foster.

CINCINNATI COLLEGE OF PHARMACY.—The commencement exercises took place at College Hall on the evening of March 16. The degree of Ph.G. was conferred by the President, Mr. H. F. Reum, and addresses were made by Prof. J. F. Judge on behalf of the Faculty and by Mr. Herman Eckel on behalf of the trustees.

ALUMNI ASSOCIATION ST. LOUIS COLLEGE OF PHARMACY.—At the annual meeting, held February 15, the following officers were elected for the ensuing year: President, J. W. Tomfohrde; Vice Presidents, F. F. Reichenbach and J. P. Huhn; Recording Secretary, G. H. M. Goehring; Corresponding Secretary, Gust. Brandau; Treasurer, Charles Gietner; Registrar, Theo. Klipstein; Executive Board.—J. G. Goehring, Dav. Hofbauer, Th. L. Riesmeier, P. Hoffmann, A. Pfeiffer, E. Knoebel. The reports of the various officers of the past year show that the Association is in a very prosperous condition.

LOUISVILLE COLLEGE OF PHARMACY.—At the annual meeting the following officers were elected to serve for the ensuing year: Dr. V. Davis, President; Emile Scheffer, Sr., and G. H. Cary, Vice Presidents; C. Tafel, Treasurer; F. C. Miller, Recording Secretary; J. A. Flexner, Corresponding Secretary; Dr. Wiley Rogers, Curator. These gentlemen, with Messrs. C. L. Diehl, P. F. C. Beihl, E. Scheffer, Jr., Dr. B. Buckle and John Colgan, constitute the Board of Directors for the current year. At the close of the last session of the school all the candidates for graduation passed very satisfactory examinations, this being the first time in the history of the school in which no candidate was rejected. A considerable portion of the bonded debt of the school will be liquidated soon, and the prospects of the College were never brighter.

CHICAGO COLLEGE OF PHARMACY.—The fourteenth annual commencement was held at Fairbank Hall, on the evening of March 10th, when the degree of Ph.G. was, by President S. L. Coffin, conferred upon the following gentlemen: George L. Corke, Charles E. Kreyssler, John Conrad, Fritz Lueder, John L. T. Davison, Frederick A. Leusmann, Conrad Engsberg, Albert G. Manns, Newton Gray, S. H. McCammon, Fred'k Handtmann, William G. McDougall, Emil F. W. Henkel, Charles Schaar, Samuel Jackson, E. Kingsford McPherson, Adolph Karpen, Elmer Eugene Schaeffer, Charles Knobloch, William L. Shockey, Albert W. Schultz.

The valedictory address was delivered by Prof. E. S. Bastin, and responded to by E. F. W. Henkel. The Chicago Drug Clerks' Association medal was awarded to J. L. T. Davison, and the Alumni Association badge to Chas. Schaar. The exercises were interspersed with music from Freiberg's Orchestra.

ST. LOUIS COLLEGE OF PHARMACY.—The fifteenth annual commencement exercises were held on Tuesday, March 15th, at Liederkranz Hall. The diploma of the College conferring the degree of Ph.G. was handed, by President Wm. H. Crawford, to the following gentlemen; William Bade, Fred. W. Conradt, Henry Drewes, Jr., Charles E. Fisher, Henry F. Griesbach, Jos. E. Hilby, Albert H. Klute, Julius F. Lohrmann, Maurice E. Pirner, Henry J. Remme, Charles F. Seidlitz, Ferd. G. Uhlich, Joseph W. Wittmer, Herman H. Blomeier, Henry F. Dannenhaus, James W.

Faught, Frank E. Fisk, Oscar E. Heitmeyer, Edward B. Joesting, Wm. J. A. Kohrnmel, Robert J. Murphy, Charles R. Ray, Adam B. Roth, Charles W. Tomfohrde, Geo. W. Wilson, George W. Wunderlich, Oscar M. Zesch.

The medal of the Alumni Association was awarded to Charles E. Fisher, Ph.G. The following received honorable mention: Robert J. Murphy, James W. Faught, Frank E. Fisk, Joseph W. Wittmer, Fred. W. Conradt, George W. Wunderlich. The valedictory address on behalf of the faculty was delivered by Prof. O. A. Wall, M.D., and on behalf of the graduating class by Charles E. Fisher, Ph.G. A social reunion closed the exercises.

KANSAS CITY ASSOCIATION OF PHARMACISTS AND DRUGGISTS is the title of an association formed in Kansas City, Mo., the immediate incitement being the desire to make preparations for the meeting of the American Pharmaceutical Association in August next. The initiatory meeting was held February 24th, in the parlors of the St. James Hotel. Mr. W. R. Newlon presided, and Mr. Wm. T. Ford acted as Secretary. A committee of five was appointed to map out plans for the reception of the national association, and to suggest other committees to be appointed hereafter.

We sincerely wish that this new association may be established upon a solid basis, and prove to be as vigorous and useful as the importance of its locality seems to indicate.

KANSAS PHARMACEUTICAL ASSOCIATION.—The President of this association, Mr. Robert J. Brown, of Leavenworth, in conjunction with Mr. George Leis, of Lawrence, Director of the Northwestern Fair Association, has issued a circular stating that negotiations have been commenced to secure for the members of the American Pharmaceutical Association and their friends attending the next meeting, at Kansas City, Mo., an excursion to the Rocky Mountains. We have been informed that the trip will be possibly extended to Salt Lake City, and that when reaching Denver a convention of Colorado pharmacists and druggists will be probably in session with a view of forming a State pharmaceutical association. It is contemplated to visit a number of the most interesting points in the mountains, and the trip will probably occupy from nine to twelve days. The fare will be much below the usual excursion rates; but, in order to secure the necessary accommodations, the above-named gentlemen should be informed at an early date.

WEST VIRGINIA STATE PHARMACEUTICAL ASSOCIATION.—The passage of a Pharmacy Act, February 21st, for the State of West Virginia, will be the incentive for the organization of a State pharmaceutical association. A committee has been formed, consisting of Messrs. Edmund Bocking, of Wheeling; E. L. Boggs, of Charleston, Kanawha county, and J. L. W. Baker, of Martinsburg, and arrangements have been made to hold a meeting of druggists and pharmacists of the State on March 25th, at 10 o'clock A.M., in Veteran Hall, in the city of Wheeling.

EDITORIAL DEPARTMENT.

PHARMACISTS AND PHYSICIANS—THEIR RELATIONS.—When we wrote the editorial with the above heading for the February number of the Journal (page 92), we did not think that we should be again called upon for further remarks upon a subject, in the amicable settlement of which mutuality should not be overlooked, and we regret that the Committee on Hygiene, etc., did not at the conference held with representatives of the College of Pharmacy intimate the nature of the resolutions (see page 193) which were subsequently reported to the County Medical Society and, presumably, adopted by that body in the form reported in another place of this number. We believe that the committee of the College would have made some explanations, which would have put a different aspect upon some of the points.

For our own part we decidedly object to the pharmacist being styled simply the *agent* of the physician in compounding his prescriptions, as has been done in the first resolution offered by the committee. The last resolution affirms that ethics do not forbid a physician dispensing his own medicines—neither does the law forbid it; but do these facts constitute the compounder the mere *agent* of the writer of prescriptions? There is nothing in ethics or in law forbiding a sick man curing or treating himself; does the physician, on being called in for that purpose, thereby become the mere *agent* of the patient? Neither can the pharmacist claim as his *agent* the druggist who supplies him with the needed herbs and roots, or the manufacturing chemist who prepares for him quinia and morphia, and yet neither ethics or law prevent the pharmacist from collecting his own herbs, and from manufacturing his own chemicals. It is a long time since pharmacy has branched off from ancient and mediæval medicine, and has established its claims as a distinct profession, co-ordinate, but not subordinate to modern medicine. It is a long time since chemistry was almost exclusively cultivated by physicians; more recently, the pharmaceutical laboratory was almost the sole school for acquiring chemical knowledge; is, on account of this former close connection, the chemistry of to-day simply the handmaid of medicine and pharmacy?

We are sorry, indeed, that, after all that has been said and written on the subject, the Philadelphia County Medical Society still regards the renewal or furnishing copies of prescriptions as a breach of the pharmacist's proper obligations to the physician (see first resolution). We should feel obliged to the society if they would point out a law forbidding it, or would prove that the practice, considered so repugnant, is not well established by usage. As to the law on this subject we desire to direct the attention of the Society to chapter 856 of the statutes of Rhode Island, more particularly to the closing sentence of section 10, which has been re-enacted in section 7 of the Rhode Island pharmacy law of 1871, as follows:

"Said prescription shall be preserved (by the apothecary) at least five years, and shall be open to the inspection of the writer thereof, and a copy shall be furnished, free of expense, when demanded by either the writer or purchaser thereof."

The resolutions of the Philadelphia County Medical Society have, with-

out authority, been published by the Medico-legal Society of Philadelphia in connection with a paper on professional relations, and with a letter from the agent of a manufacturing firm; enclosing, also, a "special mutual agreement" to be signed by pharmacists and physicians, defining the duties of the former and offering the "patronage" of the latter. While the former contains nothing that is not adhered to by a number of the pharmacists of Philadelphia, we agree with the Trade Association of Philadelphia Druggists, as expressed in a circular, dated March 9th, "that pharmacy, whether considered as a collateral branch of medicine, or as a distinct and separate profession, claims the right to frame and enforce its own code of action and determine its own line of conduct, believing itself fully able to conserve and direct its relations to others, without asking aid of others, or permitting dictation."

PHARMACEUTICAL LEGISLATION.—On page 142 we have noticed the passage of a pharmacy law for West Virginia, and now we are pleased to record the enactment of a similar law in North Carolina, which was ratified March 12th. The law provides for the incorporation of the North Carolina Pharmaceutical Association, which body is empowered to nominate ten of its members, from whom the governor selects five, who compose the Board of Pharmacy.

The bill before the legislature of Massachusetts seems to make some progress, notwithstanding the ridicule which has been heaped upon its honest advocates, who were granted a hearing before the committee having the bill in charge. The arguments in favor of such a law, as reported in the daily papers, were dignified and to the point, and, we trust, will exert a beneficial influence.

The committee of the Pennsylvania Pharmaceutical Association also had a hearing before the legislative committee, which resulted in having the bill favorably reported in the House. A memorial has since been prepared, giving a brief history of pharmaceutical legislation abroad and in this country. The bill for Allegheny county (erroneously stated on page 142 to apply to cities of the second class) will not be considered until the fate of the bill applying to the entire State has been decided.

In the State of New York a pharmacy act is under consideration, establishing three pharmacy boards, one each for the southern district (New York, West Chester and Richmond), for the eastern district (Kings, Queens and Suffolk), and for the northern district (the remaining counties of the State).

CORRECTION.—When we copied the formula, headed "Bismarck's caustic powder," on page 135, from the journal there mentioned, we thought our readers should be informed of the formula for a preparation which for some undefinable reason had been named after a celebrated statesman. The wonder ceased when we discovered that we had been the victim of a blundering typographical error in the journal credited, and that the formula originated with the well-known Prof. Esmarch, of Kiel. Our readers will please correct the name.